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ABSTRACT

The purpose of this study was to answer the following questions: (1) In what areas are sex differences supported by research? (2) To what extent are these sex differences caused by biological differences, by differences in socialization, or by differing opportunities? (3) In what way are educators reinforcing sex role stereotypes? In order to determine the influence of educators in the sex role socialization process, the social science literature on the topic was reviewed, and original research was done on the content of textbooks in Ontario. The other two questions were answered through reviews of recent literature. This study concludes that while some sex differences were found in cognitive functioning, aptitudes, and preferences, many of these were not statistically supported until ages 10, 11, and some not until early adolescence. This suggests that schools may be influencing this development. The evidence of stereotyping done by teachers is slight and contradictory; however, evidence does exist for stereotyped content in books and other educational media. In sum, there are many widely held beliefs about sex differences which are not consistently supported by evidence. Annotated bibliographies are included. (Author/JK)

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# SEX ROLES:

## BIOLOGICAL AND CULTURAL INTERACTIONS AS FOUND IN SOCIAL SCIENCE RESEARCH AND ONTARIO EDUCATIONAL MEDIA

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# Introduction

During the past few years, as educators sought ways to provide girls and boys with equal opportunities to achieve their maximum potential growth, several questions arose which required careful study and research. These questions may be summarized as:

1. In what areas are sex differences supported by scientific research?
2. To what extent are these sex differences (if any) caused by biological differences, and to what extent by differences in socialization or differing opportunities?
3. In what way are educators reinforcing traditional sex role stereotypes?

The purpose of this study, therefore, was to try to answer these questions. The second question assumed that some differences would be found while answering the first; the third question assumed that some of these differences would be traceable to socialization. These assumptions were, in fact, warranted. In educational circles the answer to the third question is the most pressing, and for that reason it is dealt with first.

In order to determine the degree of influence of educators in the sex role socialization process, the social science literature on the topic was reviewed, and original research was done on the content of textbooks used in Ontario. The other two questions were answered through reviews of recent literature.

This study concludes that while there are some sex differences in cognitive functioning and social behaviour, there are many more similarities than differences. There are also many girls and boys who are exceptions to the few differences found. In sum, while there is some evidence of group differences, there are many widely held beliefs about sex differences which are not consistently supported by scientific evidence. These conclusions are discussed in Part 3.

It was also concluded in Part 2 that there are so few biological differences which absolutely distinguish between all girls and all boys that evidence for biological bases of sex differences is not yet confirmed. Moreover, if and when it is confirmed, there will always be exceptions. For instance, although male hormones and aggression are both greater in boys than girls in general, there are still many girls who have more male hormones than some boys. There are also many girls who are more aggressive than many boys, and there is no evidence to judge whether these are the same girls who are higher on male hormones.

Another conclusion from Part 2 is that just as biology can have social consequences, social situations can have biological consequences. Biofeedback from social situations to involuntary responses of the body is recognized in other areas of investigation. It is just beginning to be so recognized in processes (such as hormone levels) which are expected to produce sex-typed behaviour. Thus, researchers must realize that when a biological condition correlates with a social behaviour, it cannot be assumed that one is the cause and the other the effect. An interactive approach is strongly recommended.

Finally, while some differences were found in cognitive functioning, aptitudes, and preferences, many of these were not statistically supported until ages ten and eleven and some not until early adolescence. This suggests that schools and educators may be influencing this development.

The evidence with respect to the degree of stereotyping done by teachers in the classroom is slight and contradictory (Part 1). However, vast amounts of evidence do exist for stereotyped content in books, and to a lesser extent in other educational media.

As this investigation was requested and funded by a branch of the Ontario provincial government, the focus is on evidence collected in Ontario. For topics for which Ontario evidence did not exist, it was necessary to turn to other provinces and to the United States for suggestive evidence. This is especially true for investigations and observations about teacher and administrator attitudes and behaviour.

Another bias in the studies and observations mentioned here is that the primary concern has come from people who say that they do not want to see a waste of human potential by channeling the development of either sex. Investigations of both sexes have revealed that in most cases some degree of channeling based on stereotyping is occurring. One exception stands out in the case of an author who was concerned about avoiding the trauma for boys of having to perform or identify with stereotyped female activities. She found no clear-cut models for each sex in the media examined and urged that explicit models be incorporated in the texts. Others looking at similar texts found obvious stereotyping and urged that the situation be rectified so that girls and boys (especially girls) would not be stunted in their growth.

This present concern for the dwarfing of girls' self-image and ambitions is akin to the earlier concern over the problems boys had with reading. The "boys' problem" eventually led to a change in texts and reading selections over the decade of the sixties, so that more boys are featured in stories than before in order to capture their interest. If history is any guide, the current concern for equality of opportunity which is being manifested in Ontario and the rest of North America by students, parents, teachers, administrators, and taxpayers will bring about a change in reversing this trend.

Two important definitions for understanding the material in this report follow:

SEX ROLES ARE SETS OF ACTIONS, ATTITUDES, EXPECTATIONS, AND EVALUATIONS. EACH SET IS CONSIDERED APPLICABLE TO ONE SEX BUT NOT THE OTHER.

STEREOTYPING IS THE PROCESS OF DEFINING THE CONTENT AND BOUNDARIES OF THOSE SETS. EVALUATION OF THE APPROPRIATENESS OF THE SET COMPONENTS IS PART OF THE PROCESS.

# Part 1: Sex Role Stereotyping and Education

1. OVERVIEW
2. OBSERVATIONS OF SEX ROLE STEREOTYPING MECHANISM IN SCHOOLS
    - A. Teacher and Administrator Attitudes and Actions
        - 1. Sex Role Stereotypes Held by Teachers and Administrators
        - 2. School System Policies Which Are Based on Stereotypes
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    - B. Media and Curriculum Materials
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                - In Titles
            - Variety of Male and Female Adult Models Shown
        - 3. Themes
        - 4. Characteristics and Behaviours Attributed to Female and Male Fictional and Non-fictional Beings
3. RELATIONSHIP BETWEEN STEREOTYPING AND CHILDREN'S ATTITUDES AND BEHAVIOUR

APPENDIX A: LIST OF ACTIVITIES AND ATTRIBUTES USED IN CODING MATERIAL

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APPENDIX C: LIST OF TELEVISION VIDEOTAPES SAMPLED

APPENDIX D: LIST OF BOOKS SAMPLED FROM CIRCULAR 14

ANNOTATED BIBLIOGRAPHY

# 1. Overview

Part 1 of this research report summarizes the writings and findings of others who have investigated the question of sex role stereotyping in the schools. This part covers research and writing about the actions of teachers and administrators as well as the degree of stereotyping in various educational media. It also reports on original research on: (1) texts approved for use in Ontario schools; (2) literature studied in Grades 10, 11, and 12; (3) educational television; (4) educational kits; and (5) Ministry Guidelines.

The first task is to report what others have said, and then elaborate on the findings of this research project with regard to the messages about stereotyping that are available for children to absorb. Prior to discussing methods of socialization, this chapter presents a brief overview of the various ways children are assumed to come to hold stereotyped notions. After the focus on stereotyping methods in the schools in Chapter 2, there is a discussion of the research which addresses itself to the question of how much is absorbed from school and other sources. This is done in Chapter 3, but the reader should be warned that the data has just begun to be collected.

Some attempts have been made by writers and researchers to assess the blame for the stereotyping that occurs in the schools. The explanations range from (1) attributing harsh motives to educators to (2) denying the existence of any ill intentions.

## SOCIALIZATION THEORIES

In order to put the question of sex role stereotyping in perspective, it is necessary to understand how such stereotypes are transmitted to children and adults. Two words used so far need clarification: socialization and understanding. "Socialization" is understood by both lay people and social scientists to involve the transmission of cultural patterns to new members of a group. It is assumed often, however, that the person being socialized is a passive recipient of the process. This is not always so, and when active seeking of information is going on, often a simultaneous counteractive attempt to feed different information diminishes the effect of both efforts.

While it may be necessary to "understand" the transmission of stereotypes, it is not true that such transmission is yet fully understood. The usual assumptions made about the learning of the culture, and about sex role stereotypes in particular, are that someone deliberately teaches and another (usually younger and dependent) person soaks it up. While some of this undoubtedly takes place, there are other processes going on at the same time.

In general, socialization theories are divided into three different categories (Mussen 1969; Maccoby and Jacklin 1974). The first is the very common learning model called social learning theory. It includes explicit teaching with sanctions and rewards, modeling and imitation, and generalization. A second category of theory is labeled identification and is associated with, but not exclusive to, Freudian theory. A third kind is cognitive development theory which grows out of work by Piaget. It is concerned with mental limits depending on level of maturity of the child and also assumes an active learning process.

Knowledge of social learning theory aids in the understanding of sex role learning by providing a learning model for those aspects of sex roles which are explicitly taught by somebody to somebody. Usually rewards and punishments are used to control the learning direction and degree of permanence. Something learned in this way can be applied to new situations (e.g., being rewarded for neatness at home may lead to an attempt to be neat at school). This carry-over of ideas from situation to situation is called generalization.

It is often assumed that people use others as models and attempt to imitate them. This is often labeled "role playing" when children copy adults. It is easy to make most adults smile when children really ham it up and play the roles superbly. Critics of social learning theory point out that the research does not show that children always use a same-sex model, nor does it explain why they should.

A second major type of socialization theory is identification theory. When one person comes to think of himself or herself as having the identity of another specific person, it is seen as the process of identification. It is like imitation, but much more complex and sophisticated in its results. Freud explains the identification of a boy with his father as a process in which the mother is seen as an object of sexual (or sexual-like) desire and the father is feared. A girl is seen to identify with her mother because the girl loves the mother. Freud also believed that children were born with the ability to feel sensual stimuli all over the body when touched by male or female. Growth toward (1) the experiencing of sensuality, primarily in so-called "erogenous zones" and (2) becoming excited by the touch of members of the opposite sex only are considered by Freud to be growth toward maturity.

Cognitive development theory, as it is applied to sex role acquisition, is less familiar and requires more explanation than the first two sets of theories. Kohlberg (1966) treats it most extensively and a summary of his work will be presented here. Cognitive development theory assumes that children go through stages in learning and that the path through these stages does not resemble the usual approach toward maturity that adults tend to assume. Children do not, as a matter of course, have just partial knowledge of what adults know. They do not have a set of partially-formed concepts waiting to be built upon. Cognitive development theory holds that at times they have images of the world that are quite different from common cultural ideas and that these images have patterns related to cognitive development.

There are four lines of development of stereotypes which are considered by cognitive development theorists. The first concerns the child's ability to label himself or herself and others with the appropriate gender label. The second is the degree to which the child sees these labels as permanent. The third and fourth describe the development of the child's formation of sex role stereotypes, especially with regard to the concept of power.

As children grow, they hear themselves referred to by name and usually as boys or girls. At first the category of "Kathy" seems no bigger or smaller than the category "girl." From the age of three, when a child can begin to recognize the appropriate sex categories of others, to the age of five, when almost all children can identify the sex of most people, there are many variations on the theme. Children at these ages tend to use superficial cues. This can lead to confusion and frustration. One mother reports that her children solved the dilemma of long hair on males by assuming that there were three classes of people--women, men, and hippies.

The problems in the use of superficial cues are eased somewhat for children because they do not see sex assignment as permanent. One three-year-old who was not distrubed by her father's long hair, was surprised one day to see him use a hair dryer. "Are you a lady, Daddy?" she asked.

Prior to a stage when children begin to "conserve" or to see properties as permanent aspects of people and objects, they think the world is a good deal more flexible than most adults realize. Prior to conserving they think that cats can become dogs and boys can become girls. This is not frightening to them and they are not easily argued out of this position. However, almost all children have learned to conserve by age five.

Once children have identified their own sex classifications and have recognized that there are broad categories, cognitive development theorists believe that they value their own category and actively seek out appropriate activities. Because a child is a boy, he is said to value boy activities. Girls are said to value girl activities because they are for people like themselves. One problem with this aspect of the cognitive development model is that it explains boys' value systems better than girls' value systems. Girls are much more likely to see boys' activities as valuable than boys are to see girls' activities as valuable. This process of seeking out same-sex activities leads to defining some other activities as appropriate for the opposite sex.

This process of categorizing some activities and characteristics as for "daddies" or for "mommies" leads to sets of stereotyped activities added to through the pre-school years until, at age five or so, children hold fairly rigid stereotypes. It has been found that these stereotypes are both rigid and quite uniform across class and ethnic categories. Even children whose family members do not do these stereotyped activities (or who do activities stereotyped for the opposite sex) actually hold stereotypes as strongly as other children. One kindergarten teacher reported an instance of just such a situation (Paley 1973). She taught a class of children in which only a few children did not have mothers working at, or studying for, a career. One day, in this special class, one girl whose mother was an M.D. refused to take the position of doctor (in role play) on the grounds that only men can be doctors. A boy whose mother is also an M.D. agreed and stepped in to play the part.

The stereotyping appears to get more and more complete and more and more uniform as children approach age five. As they enter kindergarten and as they approach Grade 1, the process continues. Then, somewhere about age seven, the ability to absorb exceptions becomes more apparent and children start diverging to the varied positions one is used to observing in populations of adults.

It would appear that the need to order the world, combined with limited mental energy which does not allow for the consistent consideration of exceptions, leads children to ignore the presence of these exceptions even in their own families. This process of selective perception occurs at all ages, of course, and is one of the reasons that stereotyping persists in spite of scientific evidence to the contrary.

Some of the above ambiguity is cleared up when one considers the last set of development stages that will be described here: the development of the assignment of power to members of sex categories. It is necessary to go back to a very early age, when a child begins to classify other people into more than one category. The first distinction is made on size or age. Children and big people are distinguished according to size.

When the next set of distinctions--gender--are made, size is used because it is familiar. Even four-year-olds are hard to convince that all males are not bigger than all females. Perceived physical size differences become equated with physical power differences. Physical power differences become equated with social power differences. For example, police are seen as male and both physically and socially powerful.

When a child goes out of the home regularly, as to a preschool or kindergarten environment, males are seen as the holders of most of the power. A child who is primarily cared for by his or her mother, however, will see women as having at least certain kinds of power. It is the growing realization that the segregation (through hours out of the home) reduces a mother's control that may, in part, explain why stereotyping increases throughout the kindergarten years. Mother, until then for such a child, presented a strong model of a powerful woman because she had such complete control.

As children get older, boys tend to stereotype more than girls and to imitate same-sex models. Some girls follow a same-sex model and others do not. One speculation is that "tomboys" are least likely to see the sexes as equal and are motivated to imitate those who have, or might grow to have, the most power.

It is possible to combine these approaches when considering a particular activity or set of activities or attributes. It is less easy to do when talking of them in the abstract. One should remember that they are attempts to explain observed behaviour and none are yet completely successful in producing a total understanding.

There are many who argue over the merits of each of these three theoretical perspectives as explanations of people's behaviour. The most vocal group has been those who fervently believe in social learning as the ultimate explanation. They urgently desire someone or something to blame for the status quo, but their theories are also the most vulnerable.

Proponents of the "social conditioning" theory of sex stereotyping argue that the social behaviours of little boys and little girls are different because parents and teachers reinforce children to behave in "sex-appropriate" ways and that "masculine" behaviours are reinforced for boys more than "feminine" behaviours. However, little evidence can be brought forth in support of this theory, at least in terms of temperament differences. Battle and Lacey (1972) found, for instance, that mothers were actually more punitive toward boys' hyperactivity than toward girls' hyperactivity.

Etaugh, Collins, and Gerson (1975) found that while teachers of two-year-olds did reinforce same-sex-typed behaviours frequently, they actually reinforced "feminine" behaviours for both boys and girls to a greater extent than they reinforced "masculine" behaviours. Serbin, O'Leary, Kent, and Tonick (1973) found teachers of three- to five-year-olds to be more likely to react to boys' aggression than to that of girls, while at the same time were more responsive to girls as a spatial function of proximity of the girls and the teacher. This last finding might be interpreted as evidence against a social learning interpretation of sex differences in aggression. On the other hand, recent evidence suggests that the mass media clearly portray reinforcement of males and male activities (when performed by males) more readily than reinforcement of females and female activities (Sternglanz and Serbin 1974).

That this state of affairs may indeed have an impact on socialization is suggested in a study by Frueh and McGee (1975) who found a clear-cut relation between amount of time spent watching television and degree of sex typing. Given the characteristics of television (Sternglanz and Serbin 1974), it is not surprising that male stereotypes are learned at an earlier age than female stereotypes (Williams, Bennett, and Best 1975). Parents may, of course, communicate approval of sex-appropriate behaviours in ways more subtle than direct reinforcement. They may also simply provide environments for children in which "sex-appropriate" behaviours are more likely to occur than "sex-inappropriate" behaviours. Rheingold and Cook (1975) found numerous and marked sex differences in the materials provided by parents for children by examining the rooms of children ranging from one month to six years of age.

A few studies suggest that socialization pressures may cause girls to have special problems in coping with intellectual achievement. Crandall and Ragson (1960) found that older but not younger girls were less likely than boys to return to a "failed" puzzle. That is, girls, aged six to eight years, tended to withdraw from failure rather than meeting the challenge. More recent work by Harter (1976), using different methods, obtained similar results. Many (but not all) girls appear to decide that intellectual achievement is simply not worth the risk of failure.

This loss of personal satisfaction in intellectual achievement is possibly reflected in the attitudes of both men and women in later life when they attribute success in males to "skill" and similar success in women to "luck" (Deaux and Emswiller 1974) or infer that women must be more "motivated" to achieve success than men (Feldman-Summers and Kiesler 1974). Such differences in attitude may also explain why boys are more likely to reward themselves for achievements than are girls.

The pervasiveness of sex-typed labels and their effects is truly remarkable. The mere labeling of activities, words, and concepts may change not only the attitude of children toward them (Montemayor 1974) but also their ability to recall sex-typed words (Nadelmen 1974) and even the way in which certain concepts are organized and stored in memory. Thus, even our most basic psychological processes are affected by sex typing, although the precise degree to which we are thus constrained remains unknown. The foregoing suggests that pressures for sex typing come not directly from the activities of parents and teachers in the way of direct tuition or training. It may, however, come more indirectly via modeling of sex stereotypes by parents and teachers or through the selection of toys and television programs.

It may also come from the active seeking of like people and things (cognitive development), coupled with certain cognitive limits and mental maps characteristic of the pre-school child. These cognitive development theories have not been tested as rigorously or as long as social learning or identification theories and have not been as heavily scanned.

It is the opinion of these reviewers that if the proponents of each theory stole the best parts of each other's material, they would explain much more of the behaviour that intrigues them.

Also, if the researchers concentrated on the more problematic future, along with attempting to explain the manner in which people have arrived where they have in the 1970s, their theories would be twice as useful.

The potential plasticity of "masculine" and "feminine" styles as conceived in our culture is suggested by Bem's work (1975) on psychological androgyny.  Certain individuals appear to have the capacity or resources to draw upon, for example, either "masculine" independence or "feminine" playfulness, depending upon the requirements of the situation.

# 2. Observations of Sex Role Stereotyping Mechanisms in Schools

Chapter 2 describes (1) what others have said contributes to sex role stereotyping in the schools and (2) what this research team has found. Since the research for this project applied solely to media, the material about teacher and administrator attitudes and actions is gleaned from others. While much has been written, there are problems of interpretation. Hence, the first section which focuses on the adults in the schools must be seen as very tentative. It is not an accusation aimed at the teachers in Ontario. At best it can be seen by teachers and administrators as a yardstick against which to measure their own behaviour and that of their colleagues.

The assumption behind this chapter is that there is evidence that most people hold and act on sex role stereotypes. Teachers, administrators, writers, illustrators, television scriptwriters, producers, and publishers are all part of a stereotyping society. In some way, everybody who communicates directly or indirectly with children has the potential to communicate sex role stereotypes.

Whether one would judge this communication as bad or good depends on one's basic assumptions about the differences and similarities between the sexes. Three popular positions can be found in the general population:

1. Boys and girls are different and should be treated differently. Believing in and teaching stereotypes is justified.
2. While it is not true that *most* boys are different from *all* girls, *most* boys are different from *most* girls and it is up to adults to help those who aren't like the majority to become as much like them as possible. It is only kindness to help those who do not fit so that they won't be ostracized from other people on account of their difference.
3. While there are basic biological differences between the sexes, for which there is no overlap, most other characteristics, including secondary sex characteristics, are found to some degree in both sexes. Rather than consider those people, especially children, who don't fit the norm as if they were handicapped and needed to be normalized, we should let them be what they are and provide all the opportunities that we have the resources to offer.

Most of the authors reviewed or quoted in Chapter 2 seem to subscribe to the last position. Although it might seem as if the authors of this literature review are deliberately trying to present the strongest possible case for one position, this was not the intent; the review is a reflection of the literature available on the subject. In the last five years, when most of this material was written, the people motivated to write were those who wanted things to change.

## A. TEACHER AND ADMINISTRATOR ATTITUDES AND ACTIONS

The dimensions of the problem as it is viewed by most writers reported here are that (1) teachers are a product of society and (2) society's stereotypes are crippling to both sexes. The further assumption is made that teachers and administrators communicate these evaluations to children and when some children do not fit the stereotypes they are crippled by their application. On the other hand, it is not often recognized, but it is reported, that children who show some characteristics of the opposite sex's stereotype perform above average in school.

The first question to be considered is whether teachers do hold stereotypes. If they do, and if these are communicated, then the question is, How is this done? This section of Chapter 2 discusses communication other than through media. Section B discusses media, and Chapter 3 discusses the effect this has on children.

### 1. SEX ROLE STEREOTYPES HELD BY TEACHERS AND ADMINISTRATORS

An important but not conclusive study was done by Ricks and Pyke (1973) who interviewed thirty female and thirty male teachers from Ontario. These teachers were asked about their differing (if any) expectations about male and female students as well as their students' and their own differing (if any) expectations of teachers and administrators. The data shows that there is definitely some admitted stereotyping on the part of some teachers. The authors of the article, however, rely too much on percentage differences when their sample size is very small. At one point they work with a sub-group of their sample which has twenty-two teachers and suggest that "50.0%" with one opinion is more than "40.0%" with another almost similar opinion. That 10 percent difference is about two people. The vagaries of interview situations are such that these differences could not be taken as real or as of interest.

Despite this occasional lapse of standards of statistical interpretation, it is clear that 73 percent of the teachers interviewed thought that male and female students behaved differently in the classroom. However, they did not agree on the substance of those differences. Some teachers mentioned activity (boys are more active or girls are more passive) and some mentioned performance (girls perform better or boys perform better). One person thought that girls were more active.

Teachers who had preferences (n=27) for either male or female students were more likely to prefer male students (n=22). Over half of the teachers stated they had no such preference. They were more consistent on perception of student preference for sex of teacher. Either they saw students as having no preference (n=29), as preferring a teacher of the opposite sex (n=6), or as preferring male teachers (n=24). Female teachers were, it seemed, not preferred because they were female, unless they were also seen in relation to the student's sex.

## 2. SCHOOL SYSTEM POLICIES WHICH ARE BASED ON STEREOTYPES

The most often cited unnecessary practices in this category are:

a) separate physical education classes for boys and girls in elementary schools;
b) separate health classes in elementary schools;
c) separate and unequal physical education facilities and programs at the intermediate and secondary levels;
d) different options in the case of home economics and industrial arts;
e) different vocational counseling involving strong channeling;
f) separate play yards and entrances for girls and boys;
g) dress codes that differ by sex.

### Separate Physical Education Classes for Boys and Girls in Elementary School

Numerous studies showing the insignificant difference in strength between the sexes are cited by advocates of coeducational physical education at the elementary level. It is thought that the fostering of the notions of passivity and lack of physical competence among girls can be counteracted by expecting them to have their gym periods with boys and to adhere to the same high standards that are expected of boys.

One author deplored the advantage boys are thought to have in access to equipment at recess:

> Boys usually get first claim on balls and bats, while girls are offered jump ropes and jacks (Bernstein 1972, p. 98).

## Separate Health Classes for Boys and Girls in Elementary School

Justification for this separation has been along the lines of saving the boys embarrassment when menstruation is discussed with the girls. Counter-arguments are that boys also need to know about menstruation and its connection with child birth (Bernstein 1972). The percentage of time spent on such subjects in a given year is not seen to justify total separation.

Other schools justify such separation because girls have health while boys have gym and vice versa. This would not be a problem, however, if physical education classes were not segregated.

## Separate and Unequal Physical Education Facilities and Programs at the Intermediate and Secondary Levels

Advocates of not separating girls and boys on *all* physical education activities do not advocate mixing them on all activities either. There is a fine line in this issue, but clearly body contact sports could not be coeducational. Golf and tennis partners on the other hand could be matched on skill rather than sex.

The reason for the imbalance in this area is often attributed to the emphasis on interscholastic athletics which focuses on the male athlete (McLure and McLure 1972).

## Different Options in the Case of Home Economics and Industrial Arts

More has been written and spoken about this form of sex role stereotyping in the schools than any other, except the messages in the textbooks (McLure and McLure 1972; McLure et al. 1971). Informal surveys in classes at the University of Waterloo suggest that there are schools in Ontario where this has not been practised for fifteen years, but that there are a substantial number of schools where it still exists.

Those who advocate change in the literature maintain that home economics as a subject for boys is justified by the future needs that people without wife or mother to care for them will have. Industrial arts is usually justified for the girls on the basis that they should have a choice.

Separation of the sexes is justified on the grounds that boys would be self-conscious in home economics and it would need to be changed for them, while girls in industrial arts would inhibit the boys' use of language and sense of masculinity.

## Different Vocational Counseling Involving Strong Channeling

Girls are seen to be the losers in the counselor's office because counselors may project their own lack of enthusiasm to fight a discriminatory system and as a consequence channel girls into the safe occupations for women. New programs for counseling women have been devised which are intended to expand their opportunity structure to equal that of boys (McLure and McLure 1972).

## Separate Play Yards and Entrances for Girls and Boys

While this practice is rare in Canada today, it does exist. At a conference in Toronto in 1972, a principal of one of the elementary schools stated that he was not aware of any sex role stereotyping in his school. He meant it quite sincerely, although he had not considered separate entrances as stereotyping. A parent of a child at the school was present and reminded him of this practice (at his school) and its implications. Within a few days the practice was discontinued.

An example from Ontario suggests that common-sense notions about stereotypes will not hold. A ten-year-old boy expressed a desire for separate entrances at his school. When he was questioned about it, he revealed that one girl in his class had managed to injure all but three boys in the class one day on their way into school.

## Dress Codes Differ by Sex

The most common difference cited in dress codes refers to a situation in which dress codes are applied to girls but not to boys (Sadker and Sadker 1972). While they are much rarer now in Canada, occasionally schools do require girls to wear dresses in all but the coldest weather. The only written documentation comes from a U.S. incident (Sadker and Sadker 1972). The principal is quoted as finding the matter of allowing girls to wear pants to school as bothersome. The protesters are pictured as annoyances.

## 3. TEACHER ACTIONS IN THE CLASSROOM

Although the dimensions of sex roles to which teachers might respond are many, only a few have been singled out for investigation. These are studies of the distribution of tasks along sex lines, the extent to which teachers approve the actions or performances of girls and boys, the extent to which they disapprove, and the extent to which they interact.

Accusations have been made by many that some of the goals of most classrooms--quiet, orderliness, neatness--are imposed by female teachers (Sexton 1969). Most of the concern has been felt for the boys as they do not fit as easily into such a restrained atmosphere. More recent essays have pointed to the problems that this order causes for girls who have already adapted to this primarily passive role (Levy 1972). The analysis discussed in detail in Chapter 3 is that the antagonism between teacher and boy leads to intellectual autonomy for boys, while compatibility of teacher and girl leads to intellectual passivity for girls. This starts to take its toll at ages nine and ten when the gap between the performances of girls and boys widens.

One important caution must be made at this time. Many of the statements made on this subject of teacher interaction with boys and girls are much too simplistic when one considers that teachers do not treat all boys alike nor all girls alike. Statistical differences between group averages do not mean that every member of any given group has the experience suggested by that group score. There are boys in every classroom who adapt to the neatness requirements with ease and girls who do not. In a hypothetical example of a test involving the performance of a task, a difference between the percentage of girls who performed well and the percentage of boys who performed well was observed. Only a very small minority of the class did well, but 10 percent of the girls did well while only 5 percent of the boys did as well. Such a difference could pass all of the statistical tests and be summarized as "girls are better at task 'x' than boys." Many people will read this statement as "most girls do well at the task and most boys do not." The case constructed here, however, is that less than 10 percent of children can perform the task well. Unfortunately more specific data is not always available.

The first group difference to be pointed to is the distinction of school housekeeping tasks along sex lines (Howe 1971; Sadker and Sadker 1972). Girls straighten out the closet, boys carry the chairs. Critics maintain that this reinforces boys' aversion to "girl" activities and deprives girls of a sense of the strength of their bodies.

Dividing any activity along sex lines is thought to be an implicit sex role distinction (Levy and Stacey 1973). Lining up, seating, coatrooms, library privileges, and competitions for quietness, neatness, etc. are all potentials for making unnecessary distinctions between types of people. A suggestion is to use eye colour as a distinguishing mark instead of sex.

Disciplining along sex lines has been documented, but there are some contradictory findings. Looking at the summary of teacher interactions with boys and comparing it to the summary of interactions with girls, the findings are as follows. Teachers make more disapproving statements to boys in one study and more disapproving statements to girls in another (Levy 1972; Sadker and Sadker 1972). Teachers make more approving statements to boys than to girls and interact more with boys than with girls. When teachers reprimand children, they speak more harshly with boys.

The evidence is, as yet, inconclusive. It is not known whether teachers stereotype in their style of interaction, or if teachers who do stereotype have similar interaction patterns.

Channeling children in their free play activities is the least documented charge. Teachers are thought to be the reason that girls play in the doll corner and boys play with trucks and blocks (Bernstein 1972; McLure et al. 1971). One teacher who saw the value in doll corner play experimented by removing the furniture from the doll corner (Paley 1973). She observed that the family role-playing activities did diminish for a while, but gradually makeshift furniture and dolls were substituted and activities in the doll corner picked up again. Needless to say, more experiments are needed before it can be known to what extent the existence of a doll corner or the attitude of the teacher affected the use of the corner and by whom.

Free time of any kind will likely see children tending to choose activities along sex stereotyped lines (Levy and

Stacey 1972; Levy 1972).

## SUMMARY

The evidence presented in the first section of this chapter does not show that teachers do or do not stereotype children by sex. Much more study is needed. Meanwhile the review of the literature does point to the concerns of those who feel that there must be some explanation for differing performances along sex lines such as they exist.

## B. MEDIA AND CURRICULUM MATERIALS

So much has been written on the sex role content of educational media that this chapter dwarfs the others in this report in size and detail. In addition to the findings of others, this chapter reports on the research just completed on the media in schools in Ontario.

The overall presentation of evidence is designed to examine as many studies of texts and children's media as could be located (many are unpublished) and to cite their findings as well as those of the present study. One purpose in putting a great deal of emphasis on the findings of other studies is to show how pervasive the patterns observed are. If one defines the question of equal and fair treatment of girls and women in children's media as a problem worth tackling, then it must be recognized that the problem is multi-leveled.

### 1. KINDS OF MATERIALS AND RELEVANT STUDIES

Four kinds of media used by children in Ontario schools are examined--textbooks, literature, video, and kits. They are arranged in the order of the estimated influence they will have on students' lives. Each medium is taken in turn and, along with the relevant studies done by others, is examined for the extent of portrayals of sex role stereotyping of males and females.

The availability of previous work varies with the type of medium. Print has been given the most attention, especially textbooks and children's picture books. Mass-media video has been studied and a few of the studies will be presented here. To the authors' knowledge, no one has published a study of sex role stereotyping in educational video. This is undoubtedly a first in the study of kits.

In review of the work of others, it became obvious that although many studies existed, none were as all-encompassing as this planned study. In the planning stages, there were few published studies of more than one kind of text available. The research also varied in quality and it was tempting to be particularly critical of the sampling methods. Too many studies chose books selectively or said it was random, but did not use probability controlled random selection methods.

Accordingly, the authors were very scrupulous about obtaining a complete sampling frame (list of books, videotapes, etc.) and, in the case of textbooks, a random sample of the books was carefully drawn, and the pages within the books. Hindsight has shown that the care taken to satisfy the purists in this study may not be justified by the results; the findings here are not greatly different from the less controlled studies. If there was anything approaching equal visibility of the sexes, sampling could become crucial. At present it is worth attention, but not if the cost is too high.

In order to cover as wide a variety of educational media as possible, all kinds of textbooks were examined--not just readers or social studies or spellers. This means, therefore, that types of texts not included in previous studies are found in this one.

Late in 1975, after coding was finished, the authors became aware of a study of a variety of textbooks done in Quebec. It is surely the most comprehensive study done to date. It looked at all fictional persons in all books in five categories of texts. Much of the data have been reported here in comparison with the findings of this study. The study includes French books listed on Circular 14 and it will be seen shortly that there is a case for cultural unity in the treatment of females in educational media.

Initially, simple random samples of video materials and literature were planned, and because it was possible to determine which items were used more than others, the authors opted in both cases for analysis of the media in heaviest use. Kits were randomly sampled, but access was more difficult and it was not possible to obtain a number of them.

## Textbooks

### Overview

In textbook analysis there are many published studies of sex role stereotyping on which to draw for precedent and for guidelines, for findings and suggested areas of investigation, and these will be reviewed here. There are however, no studies that considered all kinds of texts with the same measures. In Ontario, other research did not go beyond studies of readers and a few simple analyses of spellers and mathematics books. An attempt has been made in this study to control for biases in instruments and coders that might predetermine the results. As a result, this is a very different study than has previously been attempted.

This method is a variation of thematic content analysis in which a complex set of coding categories of actions, attributes, and attitudes (see Appendix A) is applied to units of no fixed length. The method is not tied to sentences which were felt to be too restrictive. Analysis of sentence length units does not reveal many forms of stereotyping. There was no limit to the number of codes per story, chapter, etc. as it was clearly recognized that there is large variation in this kind of material when considering texts as diverse as primary readers and auto mechanics texts.

Most studies of sex role stereotyping contained some measure or discussion of visibility of males and females. The authors have followed the lead in this and have measures of important characters, identifiable characters, beings shown in illustrations, characters mentioned in titles, and various other visibility measures.

Many studies, especially those of readers, made a point of counting the positions that adult males and females occupy in the texts. These studies counted the occupational positions and often the frequency with which individuals were assigned to them. Counts of marital positions were done and women and men compared on these. These kinds of counts are done in the section on Variety of Models.

Although thematic analysis of whole stories is not done, some data from other studies are reported.

Prior to a discussion of the findings for these four broad categories of data found in the studies of others as well as in the present one, there is a need to discuss types of studies done and then the textbook sample and method used here. First a discussion of studies by others on the topic of sex role stereotyping in the media will be presented.

In the tradition of textbook analysis, the grandparent of the specialty is reported in a 1946 monography by Child, Potter, and Levine. In Canada, the most forceful one is the McDiarmid and Pratt analysis of bias against ethnic groups in social studies books approved for use in Ontario (1971). In the United States the study cited most often is that of primary readers by a women's action group in New Jersey (Women on Words and Images 1972). There are many more, and this report reviews and presents data from as many as could be obtained to round out the picture of sex role stereotyping in textbooks in use in Canada and in the United States. The three studies mentioned above, while key studies, were each addressed to a limited set of texts.

Many of these studies are discussed in a general way. They are described under the proper heading (type of text studied) and their salient features that make them comparable to other studies are pointed out. Their strengths and weaknesses, from which the present approach to a study of texts in Ontario was drawn, is discussed. The detailed findings of each study are presented in the next section, which is broken down by type of issue being investigated (e.g., visibility of sexes, role models presented).

In general, these studies suffer from sampling inadequacy. The Canadian samples of texts were the best in this regard because researchers in each province were able to point to a definitive list of texts in a certain category which served as the entire list of books studied (in which case reference to a sample is inaccurate) or as the basis for drawing the sample. In the U.S. there are no such sampling frames (lists of the population of books from which a sample is drawn) and certainly in the area of literature there are no universal sampling frames.

THE ANALYSIS OF SEX ROLE STEREOTYPES, HOWEVER, YIELDS SUCH CONSISTENT RESULTS THAT THE WEIGHT OF THE ACCUMULATED EVIDENCE SUGGESTS THAT ANY SAMPLING INADEQUACIES ARE IRRELEVANT IN THIS TYPE OF STUDY.

There are at least two types of evidence available concerning sex bias in textbooks and children's literature. First there are studies, or rather reviews, of children's books in which particularly bad examples were selected and interpreted. This sort of evidence is very graphic and is useful for illustrating the extremity of sex biasing in specific stories. However, one weakness is that it is selective and is itself particularly subject to the biases of the reviewer. It can be argued that counter-examples could have been selected, or that the examples are not really typical of children's literature or even of the specific story in question. Another problem is that by focusing on the dramatic, this method may miss the more subtle, but possibly more pervasive, sources of sex biasing.

The second type of evidence is derived from broad surveys of children's literature that determine the proportions of stories featuring male or female characters, the number of different positions assigned to male and female characters, and the number of times various themes are associated with different characters, etc. Some researchers look at the frequency of occurrence of activities or attributes by characters. This is a more objective type of measure, but as it is difficult it is less often attempted.

## Canadian Studies Covering Various Kinds of Textbooks

Four studies have been reported which examine a variety of textbooks (as opposed to a study of just one kind of text, e.g., readers). These were from the provinces of Quebec, Ontario, Saskatchewan, and Alberta. The Quebec study was perhaps the most comprehensive as it covered both primary and secondary level texts in six subject areas (Dunnigan 1975). The population of books was well defined and the findings were clearly presented. The Ontario study (Fleming 1971) was by no means as rigorous and indeed was not done for publication. It had some points of interest, especially for spellers and arithmetic texts. The study from Saskatchewan, on the other hand, presented no statistics and only reported general conclusions (Kaplan 1973). There was not much difference in the conclusions of the studies, but it is not possible to include much of the Saskatchewan study. The Alberta discussion (Cullen 1972) is primarily discursive and was presented series-by-series or book-by-book with statistics scattered throughout. The study was of elementary texts and implied that all approved texts were studied.

The Conseil du statut de la femme commissioned the study by Lise Dunnigan, Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec and it was released 15 October 1975. A variety of textbooks was included which allowed for analysis of units of people. Since all of the textbooks in the French language arts, mathematics, natural and social sciences, health, and religion categories were included, there is no sampling question and no need to do tests of significance. Hence, the tables can be taken at face value. When it is reported that females are represented 32.4 percent of the time in the set of texts examined, that is the fact of the matter. There is no question of whether it is statistically significant. If it is socially significant, and Dunnigan believes that it is, then no further testing is necessary.

The details of the numerical comparisons are presented in the appropriate sections. It is sufficient to say here that females were found to be underrepresented in all texts at all levels by authors and illustrators of both sexes. When women and girls were represented they were primarily found in domestic activities and settings. They were affiliated with men more often than men were affiliated with women and performed service roles more often. A detailed analysis of the relationship of types of occupations of males and females as compared with the figures from the 1971 census showed the degree to which each sex is over- and underrepresented in particular categories. Analysis of certain types of behaviour also showed stereotyping.

Fleming (1971) examined several reading series, two spelling series, and two arithmetic series. In the case of the spelling and arithmetic series, which are unique to this study, she compared books at a primary level with books at the Grade 7 and 8 levels. The proportion of females featured in the exercises declined at the upper levels from the already disproportionate comparison at the lower levels.

The study in Saskatchewan, "Sex typing in textbooks used in the Saskatoon Public Schools," was done in the summer of 1971 by six Saskatoon women, who were members either of the Saskatoon chapter of the Canadian Federation of University Women or the Coordinating Committee on Status of Women in Saskatoon. They non-randomly selected thirty textbooks and each woman looked at five or six of them. They expected that the textbooks in this sample were "no better or no worse than other textbooks."

Most of the report, written by Harriet E. Kaplan, was detailed observations of sex stereotyped positions and behaviours of females. Two conclusions were stated:

> In general, the books show the stereotyped role of the women. (P. 10)
>
> The social studies and science materials seem to be presented from a man's point of view. Very few women are used as explorers or as figures in history.... Thus, it does seem the books we reviewed do present the woman in a stereotyped subservient role to that of the man. (P. 11)

The Alberta Human Rights Commission sponsored a summer student project in which the elementary textbooks used in the province were analyzed in a series-by-series manner. The Analysis resulted in the following generalization:

> The treatment of the role of women in Alberta textbooks is generally unfavourable. The girls in these books are

> passive and less productive than their male counterparts. The main character in an adventure story is most likely to be a boy while the only female characters are stereotyped as housewives, mothers, teachers or librarians. The housewife is seen as a consumer of household goods, while her husband purchases larger, luxury goods such as cars, property, etc. Men are breadwinners, and protectors of their families.
>
> In the stories, the few women who do work outside the home do so because of the death of their husbands. The woman who is the head of the family is usually
>
> 1) poor
> 2) under-rated as a serious worker in the labour force, since it is believed that when she marries she will once again become a housewife.
> 3) timid, nurturing, kind, gentle, and if she fails to re-marry, her son will certainly care for her. (P. 2)

This study was one of the few to consider arithmetic and science series. The findings from these are presented in the next section. One additional bonus was a bibliography of children's literature entitled "Girls who think and act, boys who feel and care."

## The Sample of Texts from Circular 14, 1975

Over 1700 texts are listed in Circular 14 and it was estimated that a sample of 300 would give a very valid picture of all of the texts on the approved list. Statistical forecasting techniques were used to allow the estimation of the chance that was being taken of drawing a biased sample, given the measure sought. The estimates suggested that since there were multiple measures of most variables in each book, there was an infinitesimal possibility of observed differences having occurred because of chance bias in the sample.

In addition to sampling the texts, pages within texts were sampled. The usual sample was 20 percent of each book. Because there is a consistently high concentration of codable material in readers, it was necessary to cut this percentage to 10 percent. Conversely, where there was less than 20 percent codable material in a book, the codable sections were isolated first and then 20 percent of those sections were sampled. This was done in order to ensure a reasonable amount of material from each book. There were, of course, books with little or no codable material, such as the science and technology texts at the senior and senior honours levels. Occasionally a book had no codable text but did include codable pictures and captions, such as a picture of a car with a pair of legs poking out from under and a caption identifying the legs as belonging to "the student, he...." Assumptions about the sex of unidentified legs under cars or hands holding test tubes were, of course, not made.

Originally, when the decision to limit the sample of pages from readers to 10 percent was made, it was reasoned that it would be possible to weight the codes when combined with other texts. It was also anticipated that there would be many reliability checks given the number of studies of readers from Circular 14 that have been done in Ontario. In fact, some comparative checks are done where data are available.

When it came time to do the analysis, weighting the reading material was begun. In light, however, of the findings being so far from equal, especially in questions of visibility and the fact that the content is more equal (a relative statement, not to be read as "nearly equal") at the lower grade levels where readers are concentrated, the authors felt that nothing would be gained by the extra effort, and if anything the results would be more conservative (suggesting more equality than in fact was portrayed).

The oversampling of the material in texts with little codable material is probably not a conservative move, but the number of pages involved does not make this material worth weighting either.

The distributions of the Circular 14 sample according to level (Primary, Junior, etc.), language, and date of publication are presented in Tables 1, 2, and 3. The total of 302 books was randomly sampled from the entire list of books on Circular 14. Each book had an opportunity to be included once, unless it was on the original list in English and in French. One book did appear in the sample twice as a result of the dual language situation. It was coded and counted twice to conform with rigorous sampling rules. Some of the other books that were sampled as French language were known to be on the list in English also, but the English books did not happen to fall into the sample.

Another chance of duplication occurred, but was treated in a different way. Books in the sample were listed from one to four times in Circular 14. This occurred when a book was

Table 1

LANGUAGE OF BOOKS IN SAMPLE

| Language | Number of Books |
|---|---|
| English | 238 |
| French - first and second language | 54 |
| German - second language | 2 |
| Russian - second language | 3 |
| Spanish - Second language | 5 |
| Total | 302 |

Table 2

DATE OF PUBLICATION OF BOOKS IN SAMPLE

| Date | Number of Books |
|---|---|
| 1974 | 24 |
| 1973 | 31 |
| 1972 | 46 |
| 1971 | 31 |
| 1970 | 28 |
| 1970-1974 | 160 |
| 1965-1969 | 92 |
| 1960-1964 | 34 |
| 1955-1959 | 13 |
| 1950-1954 | 2 |
| 1945-1949 | 1 |

Table 3

LEVELS OF BOOKS IN SAMPLE

| Level | Number of Books |
|---|---|
| Primary | 47 |
| Junior | 72 |
| Intermediate | 123 |
| Senior | 95 |
| Senior Honours | 42 |

listed in two different subject fields, e.g., geography and social studies or in the same subject at two or more levels. In most of the tables, data from a book are allowed to count only once. In the analysis by level, the books are allowed to be repeated in more than one level. As a result of this repetition, the data in the tables of levels (e.g., illustrations by levels) do not sum to the totals in the other tables. A list of books in the sample are in Appendix D.

## U.S. Studies Covering Various Kinds of Textbooks

Three studies that cover a range of textbooks are available in the U.S. One covered five subject areas at the elementary level (Weitzman and Rizzo 1974) while another reported on an unspecified set of "most recent textbooks adopted or recommended for second- through sixth-grade use in California" (U'Ren 1971). The latter, because of its early publication date and easy availability, has been cited over and over again, especially by people who are not doing studies but are summing up what has been done.

The third study is unique because it covered geography, physiology (hygiene), and arithmetic texts published between 1880 and 1920 (Burstyn and Corrigan 1975). This is their conclusion:

> Our study suggests that American textbook writers in the period 1880 to 1920 were slow to acknowledge the changes in society that affected the roles of women. They were

> unwilling to include material that reflected conflicts within society, and we found only one reference to women's increasing political power. Women's struggle for the right to vote passed unnoticed in these textbooks. There was, however, greater awareness of women's increasing importance to the country's economic life and to the changing moral code that aimed to abolish vice and the double standard of sexual behavior. In both geography and physiology textbooks it was female authors who expounded most clearly the new awareness of women's importance in society. By choosing to discuss each issue in its relation to women, these authors passed on an image of women's importance. Many of the male authors, by ignoring women's roles, unconsciously or consciously conveyed an image of women's insignificance. In particular, those who wrote arithmetic textbooks as late as the second decade of the present century seemed to ignore or demean women. It is interesting to speculate how far students may be influenced to like or dislike a subject by their inclusion or exclusion from its textbooks and by the images of themselves they find portrayed in them. Each individual belongs to many groups in his or her life, and one of the most crucial of these, in our society, has been one's sex group. Certainly, there has been a coincidence of female exclusion from American arithmetic textbooks and a lesser interest in mathematics among American women than men. Finally, we did discover some evidence in geography and physiology textbooks that male authors who published later in the period included comments on the role of women more frequently than those who wrote at an earlier date, suggesting that women's active participation in the world of work was a less controversial subject in 1920 than it had been forty years earlier.

The Resource Center on Sex Roles in Education of the National Foundation for the Improvement of Education published the Weitzman and Rizzo study, expecting to reach an audience of U.S. teachers. They packaged it with a set of action steps possible. The textbook study includes "the most widely used textbooks over a five-year period in science, mathematics, reading, spelling and social studies" for Grades 1 through 6. Only one or two series in each category were analyzed and they are named.

The tables and charts presented in this study are very clear and present an unassailable picture of the underrepresentation of females. The relative difference of women to men grew as grade level of text increased. The conclusions were occasionally stated in somewhat more alarmist tones than the data warranted. For instance, females were found as one-third of the characters in illustrations. Among males, 18 percent (or more than the real world proportion) were non-white. The study states however, "In summary, the data indicate that the textbook world is a world of white males...." which makes females and blacks seem to be invisible. To say that black females were quite underrepresented would be a fair statement as they were only 7 percent of the 31 percent who are female. In an absolutely unbiased group of texts, black women should be 10 percent of 50 percent.

U'Ren discussed the badly defined sample in a discursive manner. It does provide material for suggesting ways that stereotyping occurs, other than through simple counts of visibility, positions, and behaviours, but it is hard to summarize it because so little information on method was given.

## Reading and Language Arts Text Studies

In addition to the studies which have already been discussed, which all include readers and language arts texts, there are a large number of others which consider this classification of texts only. Some even specified that they were looking at the readers for one year only. Others which break it down by year may have considered books from preprimer through Grade 9, but usually have presented numerical analysis by grade.

## Canadian Studies Covering Readers and Language Arts Texts

There have been seven studies of readers and language arts texts in Canada: one from Alberta (Ladan and Miller 1975); two from B.C. (Preston 1972; Vancouver Status of Women 1973b); and four from Ontario (Batcher 1975; Textbook Study Group 1972; Venton, Traub, and Campbell 1976; and Wright 1975). There is, needless to say, considerable overlap in the books studied. Most, however, do have some unique qualities or coverage.

Ladan and Miller looked at readers in Alberta from the preprimer to the Grade 9 level (1975). The Vancouver Status of Women Council looked at two series from Grades 1 to 6. Preston looked at the same two series (and said that they were applicable to kindergarten to Grade 7). The Textbook Study Group of York (1972) and the Print Task Group of the Ad Hoc Committee Respecting the Status of Women of the North York Board of Education (Wright 1975) both studied the readers for Grades 1 to 3. The Batcher et al. group under the Federation of Women Teachers' Associations of Ontario looked at the readers for Grades 4 to 6 (1975). Venton, Traub, and Campbell (1976) looked at the same readers as Batcher et al.

Most groups looked for the extent of stereotyping. The Batcher group assumed that stereotyping was verifiable and went on to measure the extent of its existence with an eye to recommending a series or several series which were relatively free of stereotyping. All studies found stereotyping and the Batcher group found only one series which could be recommended "with reservation." None were recommended.

The three studies mentioned in the previous section also studied readers. The Quebec study (Dunnigan 1975) included readers in the French language only, while all other studies make no mention of even considering French language texts. The Ontario study (Fleming 1971), the Saskatoon study (Kaplan 1973), and the Alberta study (Cullen 1972) included primary readers. Kaplan and associates did not break down their results while Cullen presented hers in almost too detailed a fashion to be summarized and reported. Fleming was the only one to look at spellers.

Ladan and Miller (1975) studied numbers of stories, story space, and number of characters in illustrations which were female or male. They felt that using any more subjective measures would be too prone to bias. They did quote sex stereotyped examples and dialogue, as well as present frequencies on their three measures. Their tables broke down the frequencies by series and by grade level. The latter breakdown showed the usual underrepresentation of females with one surprising exception. In the one series for a pre-primer level, females were found to be important characters in 62 percent of the stories, have 59 percent of the story space and be shown as 65 percent of the individuals in illustrations. In this set of books, males were underrepresented.

The Preston study (1972) and the Vancouver Status of Women study (1973b) examined the same two sets of readers. They both concluded that balance of occurrence of the sexes was a problem and cited examples of sex role stereotyping of dialogue and situations. The 1973 study was presented in a more systematic fashion and the authors saw their presentation as a form of cope-kit for teachers. They concluded that one of the series was unacceptable and "must be replaced as soon as possible" (p. 2), while the other series "could be acceptable if extensively revised."

Turning to the Ontario studies, it can be seen that the York group (Textbook Study Group 1972) and the North York group (Wright 1975) came to the same conclusions about readers for Grades 1 to 3. The former group only presented its conclusions and no means of evaluating their study is possible. The North York group, however, did present their study design and tools for evaluation. The conclusions common to the two studies were with regard to the questions of proportional representation, stereotyping, and the presentation of females as inferior. Wright said:

> Throughout the readers the story components of plot and setting are constantly contrived to reiterate the theme that females are inferior and that males are superior.

> Whether done consciously or unconsciously, both subtle and open comparisons occur repeatedly. How is this done?
>
> In one first grade book, John and Janet are the same size. Janet falls backwards when startled by a hen but John is bowled over from behind by a huge pig. Janet can't carry an armload of vegetables, but John can lasso, from a great distance, a slim headband from the mouth of a running dog. John makes and sails a boat while the girls watch. The girls dress up in adult clothes but John doesn't watch them, he joins them in an exotic costume. When they ride a horse, John is in front controlling the reins. And so on through the stories. (P. 19)

Wright also presented some of the other reports of the subcommittee. The concerns were with the unreality of certain aspects of the world in the readers:

> There is an unreal orderliness, prettiness, and cleanliness about everything. There are no physical deformities, no major illnesses, no unattractiveness of any kind. There is no variation such as overweight, underweight, thick glasses, or stringy hair from the mythical norms of perfection; no broken bones, cuts and bruises, blackened eyes, bee stings--the reader characters lead charmed lives. They function almost as automatons. (P. 22)

Children were stereotyped within this unreal world in additional unreal ways. Stories about girls were dull yet the girls were shown as interested in their problems. The problems tended to be minor and blown out of proportion. Boys' problems were unreal in the other direction. They were adult size, not child size. Unreal clothing was also pointed out. Girls were in skirts no matter what the activity and boys wore pressed clothes in all kinds of situations.

In the study of Ontario texts for Grades 4 to 6, some unusual measures of character presentation were used. When the substance of sex role stereotyping is considered, many investigators chose characteristics which were known to be stereotyped and coded the numbers of male and females to whom they were attributed. Batcher et al. (1975) did some of this, but they also looked at some sophisticated measures of self-actualization and levels of moral reasoning. Sex differences were noted and are discussed in detail on page 223. Many good examples of the findings were displayed in the appendices of the Batcher report.

The purpose of the Batcher study was to find those texts which were sufficiently non-stereotyped to make it possible to recommend them. As was mentioned before, they recommended none of the reader series. They did, however, recommend one series "with reservation" and recommended two series for selected use. Four series are not recommended.

## U.S. Studies Covering Readers and Language Arts Texts

Eight studies of readers can be added to the growing list of studies of texts. Two previously discussed U.S. studies (Weitzman and Rizzo 1974; and U'Ren 1971) considered readers along with other texts. In addition there were the classic Child, Potter, and Levine (1946) study of Grade 3 readers; the Zimet study of classics (Males and Females in American Primers from Colonial Days to the Present, 1969); a shorter time-span change study (Graebner, A Decade of Sexism in

Readers, 1972); the most quoted study by Women on Words and Images (Dick and Jane as Victims, 1972); and several less significant studies (Frasher and Walker 1972; Kidd 1970; Stefflre 1969; and Taylor 1973). The four most significant are discussed here.

It is most instructive to consider the findings of the studies as they indicate something about the development of sex role stereotypes over time. Zimet, who was writing before the bulk of the writers who had responded to the women's movement, had as her thesis The Need for Clear-cut Sex Role Differentiation because "we know that boys show uneasiness, anxiety, and anger when they are in danger of behaving in ways regarded as characteristic of the opposite sex" (p. 79). She found that there were no clear-cut distinctions. Instead, she found that the diffusion of the roles was so great that children could not obtain information about appropriate behaviour through texts. There is not enough information presented for the reader to tell whether the data which led to this conclusion are comparable to the data which lead to opposite conclusions when interpreted by people with different motivations.

Child, Potter, and Levine, on the other hand, surveyed all the Grade 3 readers available in 1945 (published since 1930). They were struck (from the tone of their writing, one may even say shocked) by the blatant sex typing they found in the stories. They had not made sex role stereotyping one of their major concerns when they started the study, but they did analyze everything on the basis of sex of character.

Since the books surveyed are the entire population of Grade 3 readers for which conclusions are to be drawn, no tests of significance need to be applied. The findings, although surprising to Child et al., are now familiar. Boys were portrayed as more constructive, achieving, and recognized; while girls were portrayed as more affiliative and nurturant. As Child et al. state:

> The most striking fact of all, however, about the difference between the sexes is that female characters do simply tend to be neglected. (Pp. 46-47)
>
> There can be no excuse for this greater attention to males in the claim that males have achieved more in society and hence there is more to write about them. These stories are, with few exceptions, not about individuals of outstanding achievement but simply about the life of everyday characters. (P. 49)

As has already been mentioned, the New Jersey study by Women on Words and Images has been used by many people in the U.S. and Canada as a definitive work which shows that sex role stereotyping does exist.

The study included 134 elementary school readers from fifteen publishers and included 2,720 stories. The major analysis was in terms of themes which were divided into active mastery themes and second sex themes.

If sampling techniques were to be examined critically, this study would not fare well. It is not possible to know what population of books was used, as the authors said that the books were the ones used in local (central New Jersey) school systems. Given the fact that they did cover fifteen different publishers, they have probably done as well as any other study in the U.S. in attempting randomness or representativeness.

An analysis of readers by Graebner (1972) over a period of time showed that the trend to underrepresenting girls and constricting their roles was getting worse. The later series were done in 1969 and 1971.

Many of the studies of readers considered the occupations of women versus the occupations of men and invariably pointed out a very disproportionate ratio. Graebner noted that this is the one area of improvement since, although both women and men are shown in a greater variety of positions, the gap is getting smaller. She also pointed out that the number of occupations shown did not tell the whole story because women's positions tend to be mentioned only once each while males are mentioned more times on the average.

The Weitzman and Rizzo study which looks at spellers (1974) should also be noted. While there are no figures for the spellers, the particular form of stereotyping warrants quoting these authors:

> The antagonism toward women is even more pronounced in

> the spelling series. In the early spelling books the vowels are shown as females and the consonants are shown as males. Although we might expect statements about how necessary vowels are, or how we can't make words without them, instead the female vowels are treated in an antagonistic and derogatory manner. In the dialogue women are yelled at, kicked out, pushed around, used as puppets, and told to shut up. (P. 6)

## Mathematics and Second Language Texts

These two types of texts are combined in order to call attention to the similarity of problems and exercises in the books. It is not, therefore, possible to talk of important characters and secondary characters, etc. There are no titles to catch children's eyes. There are, however, within the written text, problems and exercises with content amenable to sex role stereotyping. Language texts also contain little stories or bits of written history and these can be examined as other reader or social studies texts are examined. All books with illustrations can be examined for sex distribution.

## Canadian Studies of Mathematics and Second Language Texts

There are two Canadian studies which included arithmetic and mathematics texts and none that included second language texts. This study includes both and the data are presented subsequently.

The Quebec study (Dunnigan 1975) looked at mathematics books at all levels. Their unit of analysis was characters mentioned who were fictitious. All of the analyses that they did on all other texts were applied to mathematics texts also. Fleming (1971) counted occurrences of males and females in two math books for two different grade levels. Females became relatively scarcer in the upper level.

## U.S. Studies of Mathematics and Second Language Texts

Only two U.S. studies, the previously mentioned Weitzman and Rizzo (1974) and Burstyn and Corrigan (1975), looked at mathematics. None looked at second language. Weitzman and Rizzo did not present their data for these texts but they did have some interesting points to make:

> Another feature of the mathematics textbooks is the frequent use of sex as a category for dividing people. For example, in explaining set theory, girls are set off as people who sew and cry. (P. 6)
>
> There is also strong sex-stereotyping in the examples and math problems. Despite the Equal Pay Act of 1963 we found math problems in which girls were paid less than boys for the same work. It would be hard to imagine a textbook publisher allowing this example if a black boy was being paid less than a white boy. (Pp. 5-6)

Burstyn and Corrigan do an analysis of references to females and males in arithmetic texts published between 1895 and 1919. Less than 2 percent of the references to humans are references to females.

## Studies of Social Studies and Health Texts

Social studies and health texts are combined because of the similarity of material for lifestyle modeling, especially at the elementary levels. History and geography are traditionally included in the social studies category, although the distinction becomes more explicit at the secondary levels.

### Canadian Studies of Social Studies and Health Texts

Only one study of sex role stereotypes in social studies texts has been done in Canada (Atnikov et al. 1971), although the prototype study of bias for or against ethnic groups (McDiarmid and Pratt 1971) focused on social studies texts and had some findings on visibility of women. The Alberta study (Cullen 1972) and the Quebec study (Dunnigan 1975) included material on social studies texts and health texts.

Cullen did a book-by-book analysis of one elementary social studies series. It is primarily a discussion of selected instances of stereotyping. Dunnigan displayed the range of statistics on visibility, positions, and roles in the Quebec books that have been discussed before. The same can be said for their treatment of health books, with the exception that they showed much more favourable data about the balance of the sex distribution in health books.

In light of the McDiarmid and Pratt findings in Teaching Prejudice (1971) it is not unexpected that an analysis of sex role stereotyping in social studies texts reveals prejudice against women.

McDiarmid and Pratt did a content analysis of social studies textbooks authorized for use in Ontario, using three methods. The first, evaluative assertion analysis, isolated statements about ethnic groups and assigned positive, neutral, or negative scores to the components of those statements. They also used illustrations and analysis of treatment of special topics.

McDiarmid and Pratt did not use evaluative assertion analysis to study sex role stereotyping, but Atnikov et al. (1971) did. In the Manitoba study of forty-one authorized textbooks in history, geography, and social studies they found that assertions about women averaged out to a neutral score. This can be interpreted as evidence that there is no appreciable prejudice[1] or that evaluative assertion is not capable of revealing sex role stereotyping when it is present. Atnikov et al. chose the latter interpretation and described what they thought were the forms of discrimination:

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[1] The authors found neutral averages for assertions about Jews, Negroes, Indians, immigrants or French Canadians. Moslems were presented in an unfavourable light more often than favourable, while Christians were presented as favourable more often than unfavourable.

> Omission, stereotyping and imbalanced treatment, were the ways in which women were discriminated against in the text.
>
> Women were consistently portrayed as passive and less productive than men.
>
> Women were always shown in a position subordinate to that of their husbands'.
>
> Women are stereotyped as housewives, and as consumers of household goods, whereas men are portrayed as being consumers of larger status linked goods. Even when women enter the work force, their importance to the economy is under rated by the assumption that they are only temporary workers. (P. 19)

Other conclusions will be presented subsequently, although it should be mentioned that the data collection method used as a basis for their conclusions are not made clear. A book-by-book analysis is included in the report.

Illustrations as a source of visiblity were pointed to by both studies, although McDiarmid and Pratt did not intend their data to show anything about the treatment of women or girls:

> We also decided to note the presence of women and children in every picture because we felt this association was likely to engender a greater sense of identity and hence to attract younger pupils. (1971, p. 48)

Using the white Canadians as a control group, the authors managed to show that the treatment of women and children[2]

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2. Ideally one would look at the treatment of women and girls separately from the treatment of boys. The researchers report that they collapsed the two categories because coders were unable to distinguish between the pictures of women and the pictures of children in all instances.

was limited to less than 30 percent for all groups.

With the exception of a few statements about the treatment of women in history by Atnikov et al., no discussions of the treatment of women in Canadian history texts have been found. Hence this study has to turn to U.S. studies for guidelines as to method of investigation. It is ironic that there is no Canadian precedent in such a study of history texts because these are a type of book in which geographical and political boundaries present the strongest case for independent analysis.

## U.S. Studies of Social Studies and Health Texts

Of the studies obtained, only two U.S. studies discussed findings for social studies texts in general, and one of them only spent half a page on it (Frisof 1969; Weitzman and Rizzo 1974). The other studies available are primarily of U.S. government and history texts (MacLeod and Silverman 1973; Rosen 1971; and Trecker 1971). Burstyn and Corrigan (1975) examined geography and physiology (hygiene) texts published from 1880 to 1920.

Frisof wrote the first article on elementary social studies texts (1969) pointing to the discrepancies in the presentations of women in occupational and homemaker roles. The author did not present data nor explain sampling or data collection methods. Weitzman and Rizzo, on the other hand, were explicit about methods and it was clear that they have data, but it was not all published.

Weitzman and Rizzo pointed out that the social studies series that they studied had some positive characteristics. Females were more visible than in the other kinds of texts. Women were shown as skillful and as teaching their daughters. Fathers were shown as nurturant and as teaching their sons. The marring of this otherwise positive picture is the sexual division of teaching labour.

When discussing the study of sex stereotyping in history and government texts, investigators have to make different assumptions than they make when looking at any of the previous categories of texts. Because the events and institutions (e.g., governments, which are the subjects of history texts) have been so male dominated it is difficult to argue for absolute equality of visibility in these texts. On the other hand, it is not difficult to isolate inaccuracies and offensive denigrations of girls and women and these do occur.

The question of visibility of women has been approached in two ways. Counts of women in indices have been compared with counts of men in indices, and the treatment of certain significant events and significant women have been investigated. The discussions sometimes ignored the question of values, but that is clearly the issue.

Trecker put this most clearly:

> To these observations, authors of high school texts might reasonably respond that their space is limited and that they seek out only the most significant material and the most influential events and individuals; that if dance is omitted, it is because more people read novels, and if such topics as the role of female missionaries or colonial politicians are neglected, it is from lack of space. One is less inclined to accept this version when one notices some of the odd things which authors do manage to include. One feels like asking, "How important was Shay's Rebellion?". Should the Ku Klux Klan receive reams of documentary material and woman suffrage none? Do we want to read four pages on the six-shooter? Is two columns too much to give to the Empress Carlotta of Mexico who lived most of her life in insanity and obscurity? Is the aerialist who walked a tightrope across Niagara Falls a figure of even minor importance in American History? Is Henry Demarest Lloyd more important than Carrie Chapman Catt? Are the lengths of skirts significant enough to dwarf other information about women? (P. 260)

All of these questions can be rewritten with Canadian material because the principle behind them is the same. How do the values that determine what gets put in and what gets left out of history texts become explicit, and then how do the competing groups have their claims settled?

The American Association of School Administrators in their Executive Handbook Series (1975) spoke to this issue:

> History books are weighted in favor of the political and military, against the economic, social, and cultural. Because of women's virtual exclusion from direct participation in the first two fields (except for Elizabeth I, Joan of Arc, and a few others), they are all too completely excluded from the history books as well. Typically, the only women mentioned in U.S. history are Betsy Ross, Pocahontas, and Eleanor Roosevelt. The long, bitter struggle for woman suffrage, begun by female abolitionists, is made to appear a genteel pastime rewarded by a chivalrous Congress. In addition, suffrage is presented as the ultimate goal of the women's rights move-

> ment. The texts ignore the continuing inequities in areas such as employment, credit, marriage and divorce, and education--as well as the continuing struggle to remove them. Instead, they present a few female writers and artists in isolated sections on cultural background. (P. 14)

Questions of accuracy and fairness of treatment are subquestions of the value and space questions above. If not much space is allocated to the treatment of a particular event or category of persons, then it must be simplified. The less the space, the greater the simplification. It follows that simplification will increase the likelihood of a presentation being judged inaccurate or unfair. A sub-question of this is the use of male nouns and pronouns as generic forms. They are language conventions and much easier than any of the newer substitutes. Authors of studies of history texts point out that the use of male nouns and pronouns makes it difficult to tell whether women and girls were present at all in certain places in certain times in history. Such ambiguities can sometimes constitute unfair treatment of one sex or the other.

Aside from the unfair treatment which arises from lack or minimization of treatment, there is the problem of patronizing attitudes or outright denigration of women and girls. In the former, women are seen as appendages of men when they were as integral a part of the activity involved as the men. An example would be the joint ownership of a farm and property, always referred to in terms of the man's ownership. In the nineteenth century, men could not get along without women any more than the women could get along without men in homesteading. The division of labour was such that one sex could not survive without the input of the other in a viable farming operation.[3] The use of the noun "men" to mean male and female homesteaders is misleading and confusing. One of the texts in the present study, for instance, was about a period of Canadian history when there were no women at all in certain places at certain times. Given the widespread use of male nouns and pronouns and the underrepresentation of women in illustrations, it was not clear until quite far into the text that there had been no women there. At that point, the first woman was introduced by saying that a man had brought his wife and family to join him. Critics of this patronizing manner will point out that it could easily have been stated in terms of the woman's actions, i.e., the woman traveled to that place and joined her husband in homesteading. One gets quite different images of the woman, depending on how it is stated. The same can be said for the children.

Particular attention has been paid to the treatment of the women's movements in the studies of American history texts. In addition, Rosen (1971) has pointed to the potential for patronizing attitudes by people who study and write about the women's movements. She focused on people who have written one or more books on the matter, who presumably have taken the matter seriously. One example of an observation she made is the persistence of an author who consistently introduced women active in the movement by describing their relationships to men and their families. After this irrelevant introduction came the information on their activities in the movement.

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[3] See Leo Johnson, "The Political Economy of Ontario Women in the Nineteenth Century," in Women at Work (Toronto: Canadian Women's Educational Press, 1974), pp. 13-31.

Atnikov et al. (1971) pointed to selected observations in Canadian texts:

> The history of the suffragette movement was not presented with proper balance. For example, one textbook gave two female and seven male viewpoints on the issue. All the grade six textbooks and one grade ten American history book neglect the issue of women's rights entirely. Only one book carried the discussion further than the suffragettes gaining the right to vote, and none dealt with modern feminism. (P. 21)

## Studies of Science and Technology

Natural science books are not investigated nearly as often as social science books and that was not surprising. The texts seldom lend themselves to analysis, although it is possible in the lower grade levels to extract information when fictitious people are used to present a point. There is, however, a great deal of information to be found in illustrations and mentions of individual scientists.

Two Canadian and one American study mentioned science texts as a separate category of investigation. These have all been mentioned before and will come up again in future discussions. Cullen (1972) discussed two science series used in Alberta elementary schools. Dunnigan (1975) looked at science texts in Quebec. Weitzman and Rizzo (1974) looked at a best-selling science series in the U.S. All found similar patterns in the illustrations. Men dominated the illustrations; boys outnumbered girls; and women were the most underrepresented group. All had some particularly bad example of the undervaluing of women to which to point.

### Studies of Business and Economics Texts

The present study will be the first to include these kinds of texts.

### Studies of Religion Books

The Quebec study is the only one which looked at these kinds of books. They found that religion books had the same type of bias as most other texts.

The present study will not be looking at any religion books, although the question of the study of religions in different media is examined.

## Literature Used in the Schools

### Overview

An attempt has been made in this section to classify literature by level. There are Canadian studies of picture books and of literature at the senior level. Several studies of picture books were done independently of this project and are reported here. A study of literature used in Ontario schools at the senior level has been done and the data are reported here.

Other studies from the U.S. fill in the middle level and a brief analysis of folk and fairy tales is included.

### Canadian Studies of Children's Picture Books

There are four studies of children's picture books in Canada, although three are unpublished at this time. Cheda (1972) did a non-random sample of books in the Toronto Public Library. Of 175 books that she scanned, very few had female main characters. Pyke (1972) reported on studies of two different samples. One attempted to look at the current crop of books at the time, and another to tap those books which were popular according to the counts in four different metropolitan public libraries. Hunter (1972) looked at a sample from a school library. Fischer and Carter (1976) looked at two time periods in the same southern Ontario urban library.

Cheda (1972) in the only published piece discussed her sampling and observations and the studies of others. She reported on studies of award-winning U.S. books which are on the shelves in most Canadian libraries. These studies will be discussed in the next section of this chapter.

Pyke (1972) aimed at finding not only the current crop (at that time) of books, but those books which were chosen most by children in urban areas. The first sample was drawn from major publishers' lists of books available in 1971. One hundred and two books were analyzed and found wanting in the same way that texts were found to be deficient. Girls and women were featured much less than their numbers in the population would warrant, and they were severely restricted in their roles. The second study of forty-seven of the most popular books showed approximately the same results.

Hunter (1972) chose a fairly limited sample, from a school library in Southern Ontario, of books about children in realistic settings. She investigated the themes put together by Women on Words and Images in their study of readers (1971). The authors have done some reanalysis of the data from both of these studies and it is presented in the section on themes.

Fischer and Carter (1976) looked at a sample of books from the Hamilton Public Library, main branch, and found the same things as other people in other studies. They used a controlled sample and did not code the entire book each time. They randomly sampled the pages within the book and randomly sampled the books so that their results would be generalizable to the whole collection in that library. They also included many more activities than are usually coded so that their results were comparable to the textbook study reported here.

Consistent results were found in these studies. Females were underrepresented and the female role was severely constrained. They all show that the male role was very varied. Boys were shown as having a range of activities and emotions, including those stereotyped for females. Some slight evidence exists that these trends are going away from equality.

## U.S. Studies of Children's Picture Books

Canadian libraries have no choice but to buy mostly American books when it comes to children's picture books. There are simply not enough Canadian books to stock a library. As a consequence, American studies tend to draw from the same population of books as do Canadian ones. There are, however, some unique qualities of some American studies which make them worth noting, especially as they bear directly on Canadian library holdings.

Heyn (1969) wrote the first feminist piece of criticism of sex role stereotyping in picture books of which the authors are aware. She inspected a wide range of books for their treatment of adult women. Soon after, several reports of studies of prize winning books were published. Weitzman et al. (1972) looked at Caldecott Award winners, Newberry Award winners, a sample of Little Golden Books, which had sold over a million copies, and selected etiquette or explicit role-modeling books. The Feminists on Children's Literature (1971) also reported on the Newberry Award winners, as well as samples from two lists of recommended books. One was recommended by the Child Study Association and the other by the American Library Association. Czaplinski (1972) looked at Caldecott Award winners, Lewis Carroll Award winners, and some bestsellers. Nilsen (1973) covered the Caldecott winners also.

There were several specialized studies such as the Stewig and Higgs (1973) study of the image of mothers in picture books. Rinsky did a small survey of sex of author (1973), and Prida et al. (1972) looked at all the picture books with Puerto Rican themes that were available at that time (100 in all).

Key (1971) summed up the prior research and the conclusions are not dissimilar to those reported over and over again in this literature review. She reviewed studies of picture books, as well as texts, and focused on the language problem caused by generic nouns and pronouns. There is discussion of this in the section on page 231.

## Fairy Tales and Folk Tales

Alison Lurie (1970, 1971) made a case for the "liberated" nature of folk tales. She was not as kind to fairy tales, but did not see them as strong in sex role stereotyping characteristics as most "feminists" would. Lieberman (1972) took issue with Lurie and actually took one of the books that Lurie recommended and analyzed it for sex role stereotyping. Unfortunately, there were no systematic coding methods used so that one could check the author for biases. Donlan (1972) analyzed the negative image of women in nursery rhymes and fairy tales. He claimed, as Lieberman did, that the only sympathetic female characters were the prepubescent girls and the little old ladies.

## Intermediate Level Literature

While a number of authors addressed themselves to the question of sex role stereotyping in intermediate level literature, only three did systematic coding and data analysis. Since few authors chose the same age ranges of children's literature, there was a wide range of literature included in this category, labeled "intermediate" for convenience.

Wiik (1973) studied textbook anthologies and found the same strong underrepresentation of women that had been observed in texts and other literature. Lukenbill (1974) systematically coded and analyzed 227 novels with settings in twentieth-century United States. He was looking at the image of fathers in adolescent novels. He concluded that the emotionally stable, middle-class, breadwinner, father-image found in this literature accurately reflected societal images.

> One glaring deficiency seems to be the portrayal of the mother and her relationship both to the father and the whole family unit. Perhaps in overemphasizing society's custom that the father should be the chief breadwinner and head of the family, the authors of these sample novels inaccurately presented mothers as weak, unassuming individuals with little identity outside their homes, and with little real influence on the family environment. (P. 540)

Hillman (1974) chose to look at three years from each of two decades. The books were for the eight to thirteen age groups and were chosen from books reviewed in well-known book reviews. The findings for the decade of the thirties and 1963-72 were similar in that more male characters were found than females (statistically significant), males had many more occupational positions than females, and behaviours were, to a certain extent, stereotyped. One positive finding is that these patterns diminished over the years. The most discrepancy was with the representation of occupations.

In a series of intriguing titles, six authors reviewed certain kinds of fiction with some positive and some negative findings. Siege (1973) and Tate (1973) examined "heroines in recent children's fiction" and "sexual bias in science fiction for children" respectively and pointed to a number of non-stereotyped girls as main characters in both types of literature.

Stavn (1971) examined the portrayal of girls and women in fiction about boys; Thomas (1967) looked at Canadian women in fiction as well as those who wrote diaries; and Heilbrun (All Pregnant Girls Have Boy Babies, 1970) looked at fiction about teenage pregnancy. In one British review (Craig 1970) it was found that "Boys are straightforward, resourceful, sensible, brave, humane, adventurous, strong, rational and reliable. Girls, on the other hand, tend to be emotional, silly, erratic, coy, gullible, timid, sentimental, passive, nervous, vain, dependent, weak and untrustworthy. Or so most writers of children's books would have us believe." None of the last six followed a systematic coding and counting procedure so their findings can only be seen as suggestive.

## Senior Level Literature

Since most literature for the senior level is also considered adult literature, it has not been as inviting to study it. Hence, the only analysis of such literature known to the authors was done as part of this study. In an attempt to obtain a sample of novels and plays currently studied in

Grades 10, 11, and 12, a random sample of twenty secondary schools was selected from the directory provided by the local offices of the Ministry of Education. A final sample of fifteen schools was obtained. From these schools a total of over 1,400 titles was obtained! Often only titles were provided, although sometimes the authors' names and occasionally the publishers were supplied.

It is obvious from the large number of titles provided that this is not a sample of books actually used in any one year but rather a list of books from which teachers apparently selected. There was considerable overlap in titles from school to school and, in fact, from grade to grade. It was decided that the most meaningful picture would result from study of the most frequently cited titles, and therefore any that appeared two or more times within any grade level within the fifteen schools were selected for analysis. Of the sixty-eight books meeting this criterion, a sample of fifty novels and plays was chosen.

The basic quantitative analysis was performed on the following kinds of information:

1. nationality of author;
2. sex of author;
3. sex of important character(s);
4. sex of identifiable characters;
5. social roles of identifiable characters.

Nationality of author was determined from various critical biographies. Critical reviews in various reference works generally provide a criterion for selection of important and identifiable characters (i.e., if a reviewer found it necessary or important to describe a character in a relatively brief review of a novel, then such a character would be deemed an "identifiable character"). Social roles were determined in a similar manner. In the case of plays, such information was generally provided in the cast of characters listed at the beginning of the book. Occasionally, particularly in the case of Canadian authors, it was necessary to refer to critical reviews published in newspapers at the time the book first appeared. On the basis of that survey of critical reviews, the fifty titles for which the most complete information was available were chosen.

The substantial overlap of titles indicated general agreement among the schools about the kinds of literature that ought to be studied in secondary school. Suitable authors were even more readily agreed upon. Several authors had more than one novel or play appearing two or more times. By this criterion, the most popular authors in this sample are: Shakespeare (six plays); Steinbeck (four novels); MacLennan (three novels); Orwell (two novels); and Shaw (two plays). Although there was much overlap, there was also great diversity across schools. Some schools appeared to be somewhat more "traditional," more likely to recommend classics, while others listed more contemporary works. Some schools list considerable science fiction and one school provided a remarkably long list of feminist books! Such idiosyncratic tendencies are not, of course, represented in the sample simply because the criteria deliberately excluded them.

## Video in Ontario

As yet, there are no studies of sex role stereotyping in educational television, although there are a number of studies based on public and network television. The primary one, which is not widely available, is a report to the CRTC by several women's groups in Ontario. They monitored the CBC for a period of time and found underrepresentation and stereotyping. An American study of network television by Women on Words and Images (1975) shows similar results.

This study is modeled after the textbook analysis. The same coding categories and the same coders were used. Hence, the presentation of data follows within the appropriate section. In choosing the sample, it was decided, in conjunction with the liaison representatives in the Ontario Ministry of Education and OECA, that a simple random sample of the programs available to the schools would not be representative since there was great variation in the usage figures for these programs.

Given this consideration, the sample of minutes of program to be coded was taken from a list of the twenty-three most used series (i.e., those requested by schools). The sample consisted of five-minute segments, not including standard introductions and closing segments. The total number of minutes coded was 640.

## Kits

"Kits" are often used as supplementary resource material in the classroom. These are listed with other resources in Circular 15 and it was necessary to first isolate them and then choose a simple random sample of twenty. They proved difficult to locate and the total number of coded kits turned out to be sixteen. These are listed in Appendix B.

The kit material was coded using the same categories developed for the texts and was done by the same coders. The findings are presented in the appropriate sections of this document.

## Other Types of Educational Resources

In this study, one further category of resource materials was examined and these were the guidelines that the Ministry publishes, which set the limits for the material included in any particular curriculum. Twenty guidelines were chosen randomly from a list of guidelines not scheduled for deletion.

## 2. VISIBILITY OF GENDER DESIGNATION OF FICTIONAL AND NON-FICTIONAL CHARACTERS

One of the quickest ways, and therefore the most cited method, of checking attitudes toward girls and women in media is to look at visibility, or the number of females and males featured and/or given some focus in print or in picture. Another form of visibility is the number and variety of positions (e.g., mother, letter carrier) that are occupied by characters (both fictional and non-fictional). For analytical reasons, a distinction is made between occupying a position (e.g., mother) and the behaviour of the person in that position (e.g., cooking, disciplining).

### Frequency of Occurrences of Females and Males

Counting characteristics by sex and age should give some measure of the representativeness of the distribution by sex. Other distinctions which should be made are between humans and animals. In certain kinds of texts and literature one can find imaginary creatures and anthropomorphized inanimate objects. Some researchers have also considered the gender distinction made for inanimate objects such as ships and machines.

In general, the assumption is that because females constitute about half the population (among humans) that they should be represented as 50 percent of the characters or beings. Exceptions to these assumptions occur in subject areas which reflect the real world, where fewer women than men participate (e.g., government).

There are several ways of counting characters. This discussion covers important characters, identifiable characters, beings shown in illustrations, and beings mentioned in titles.

Each study uses its own definition of important or central characters and often do not make clear what criteria were applied. Only a few studies have looked at identifiable characters--a larger category of beings.

## Frequency of Females and Males as Important Characters

Keeping in mind that the word "character" is not limited to fictional people, and that a comprehensive study of textbooks and other media includes beings as diverse as a well-known scientist and an imaginary six-legged creature who talks, one can see problems in finding researchers with the same sets of assumptions and conclusions about definitions. Those studies which covered the widest range of media have the broadest definition of "character" and accordingly of "important," "main," or "central" characters. Some researchers deliberately limited themselves to fictional beings to avoid such problems.

Other variations found among studies include the sampling procedures (or lack of them) and the unit of analysis. The sampling question has been dealt with before, but it is worth restating: that due to the consistency of the findings, sampling anomalies seem irrelevant.

The same can be said for choice of unit of analysis. It does not seem to matter what unit was used--fictional human characters, or story or "thema"--the results were consistent.

## Important Characters in Textbooks

The consistency of the results can be seen by looking over the next set of tables. Although the female-male comparison shows females as central characters ranging from 6.9 percent to 62 percent, the effective range is from 11 percent to 40 percent.[4] The modal percentage of females in a female-male split is in the upper twenties range and that is simply too far from 50 percent to worry about the distinctions within the range.

In Table 4, the Quebec study is the only report which covered a range of types of texts and which reported important characters. It used as its unit of analysis all fictional

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[4] Only three studies show figures over 40 percent and these can be explained as exceptional.

Table 4

NUMBER OF MALES AND FEMALES AS IMPORTANT CHARACTERS IN STUDIES OF A VARIETY OF TEXTS

| Author | Pub. Date | Unit | Sample | | Humans | | Children | | Adults | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | F | M | F | M | F | M |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable, fictional, human characters (in stories mentioned more than once). 24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools. (154 Elementary, 71 Secondary) | Total - | 3086<br>27.2%<br>includes young adults | 8269<br>72.8% | 1999<br>36.4% | 3501<br>63.6% | 888<br>17.4% | 4212<br>82.6% |
| | | | | Elementary - | 2445<br>32.4%<br>includes young adults | 5095<br>67.6% | 1741<br>39.6% | 2658<br>60.4% | 648<br>22.0% | 2299<br>78.0% |
| | | | | Secondary - | 634<br>16.7%<br>includes young adults | 3186<br>83.3% | 256<br>23.4% | 836<br>76.6% | 238<br>11.1% | 1911<br>88.9% |
| | | | | Major - | 2031<br>28.2%<br>includes young adults | 5178<br>71.8% | 1250<br>37.3% | 2105<br>62.7% | 639<br>18.4% | 2829<br>81.6% |
| | | | | In same-sex groups - | 1055<br>25.5%<br>includes young adults | 3091<br>74.5% | 748<br>[illegible]4.8% | 1396<br>65.1% | 248<br>15.2% | 1383<br>84.8% |

characters (Dunnigan 1975). To read this and the following tables, one can see the distinction between studies reported by looking in the first column. The sample for which the data are reported are defined in column four. More detail on any of the items in columns one through four may be found in the discussion in the section on page 38 or in the abstracts. As often as the data were available, the frequencies or counts are provided in the remaining columns. In some of the subsequent columns there are only percentages. This is usually the case when the original study reported only percentages. Normally the columns labeled "Humans" contain totals of the columns for children and adults. In the case of the Quebec study there was an intermediate group for which individual counts were not given. These counts of male and female young adults were, however, included in the totals for humans and are so noted on all of the tables.

In the row of figures for all the texts, one can see that the representation of females is not anywhere near equal. If a distinction is made between elementary and secondary texts, a pattern emerges which is going to be seen over and over again:

AS THE GRADE LEVEL OF THE TEXT GOES UP, THE PERCENTAGE OF FEMALES GOES DOWN.

One must ask the question (although there is clearly no answer) whether this could be related to findings which show girls' IQ scores decreasing with relationship to boys' as grade level increases.

The Quebec study did count all same-sex groups as only one count for that sex. That is, a group of three girls was coded as a same-sex group of girls and added only one to the total of girls. This means that the "Total" row cannot be interpreted as a count of all females and males.

Another pattern which can be seen from this table, which will be seen over and over again, is that:

THE REPRESENTATION OF FEMALE AND MALE ADULTS IS FARTHER FROM EQUAL THAN THE REPRESENTATION FOR FEMALE AND MALE CHILDREN.

Table 22 contains comparable data from this study. This table includes important characters divided into three categories. The first is the traditional important character in a story or an important person mentioned in a text in some way. The authors' definition of "important" was broader than that for other studies because of the nature of the sample. Faced with a very wide variety of texts, "important" was defined as anyone of importance to the story or to whom at least a paragraph was devoted. Coders had two other options: secondary and undecided.

The second kind of important character shown in the sample is the character or group whose members were not treated as individuals at any time, but whose membership was specified.

The third type of important character is the generic reference or a generalized being which was assigned a sex. These references were made in three ways: to an individual (e.g., a girl should be neat); to some members of a category of individuals (e.g., some girls are angry); to a whole category of individuals (e.g., bears are dangerous).

The interpretation of Table 5 resembles the observations made from the Quebec study (Dunnigan 1975), and the observations that can be made from the other studies to be reviewed here:

FEMALE BEINGS ARE SERIOUSLY UNDERREPRESENTED AS IMPORTANT CHARACTERS IN TEXTS APPROVED FOR USE IN ONTARIO.

AMONG HUMANS REPRESENTED AS IMPORTANT CHARACTERS IN TEXTS APPROVED FOR USE IN ONTARIO, WOMEN ARE MORE SERIOUSLY UNDERREPRESENTED IN COMPARISON WITH MEN, THAN GIRLS ARE IN COMPARISON WITH BOYS.

These data show the following which has not previously been observed in other studies.

WOMEN ARE ALMOST NEVER REPRESENTED IN A GENERALIZED (GENERIC) WAY AND GIRLS NEVER ARE IN TEXTS APPROVED FOR USE IN ONTARIO.

The categories of generalized women referred to, in addition to the references to "women" are wives, mothers, housewives,

Table 5

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Non-groups | | | | | | | | | | | | | | | | |
| Female | 628 | 16.9 | 567 | 16.1 | 186 | 36.2 | 381 | 12.7 | 34 | 22.8 | 12 | | 7 | | 8 | |
| Male | 3091 | 83.1 | 2946 | 83.8 | 327 | 63.7 | 2619 | 87.3 | 115 | 77.1 | 19 | | 12 | | 0 | |
| Indeterminate | 246 | | 152 | | 20 | | 132 | | 77 | | 8 | | 9 | | | |
| Specific Crowds or Groups | | | | | | | | | | | | | | | | |
| Female | 38 | 12.1 | 35 | 11.4 | 6 | | 29 | 10.0 | 3 | | 0 | | 0 | | | |
| Male | 276 | 87.8 | 271 | 88.5 | 12 | | 259 | 89.9 | 3 | | 2 | | 1 | | | |
| Mixed | 126 | | 109** | | 7 | | 100 | | 15 | | 2 | | 0 | | | |
| Generalized or Generic Beings | | | | | | | | | | | | | | | | |
| A non-specific individual | | | | | | | | | | | | | | | | |
| Female | 21 | 6.9 | 21 | 8.8 | 5 | | 27 | 7.6 | 0 | | | | | | | |
| Male | 281 | 93.1 | 279 | 93.0 | 5 | | 274 | 93.2 | 2 | | | | | | | |
| Some non-specific individuals in a category or group | | | | | | | | | | | | | | | | |
| Female | 3* | | 3* | | 1 | | 2* | | 0 | | | | | | | |
| Male | 26 | | 24 | | 1 | | 23 | | 2 | | | | | | | |
| Mixed | 49 | | 35 | | 4 | | 31 | | 14 | | | | | | | |

Table 5 (cont'd)

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Generalized or Generic Beings (cont'd) | | | | | | | | | | | | | | | | |
| All beings in a category | | | | | | | | | | | | | | | | |
| Female | | | 58 | 13.3 | 10 | | 48 | 11.6 | | | | | | | | |
| Male | | | 377 | 86.6 | 13 | | 364 | 88.3 | | | | | | | | |
| Mixed | | | 148 | | 12 | | 136 | | | | | | | | | |

*All female-male comparisons are statistically significantly different in those cases where percentages have been done. Where they have not been done, an asterisk has been used to indicate statistically significant differences.

**There are crowds included in this count that include adults and children in the same crowd.

Table 6

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS IN ENGLISH AND FRENCH

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| All French Texts | | | | | | | | | | | | | | | | |
| Female | 128 | 20.7 | 114 | 20.7 | 50* | 45.0 | 64 | 14.5 | 11** | | 1 | | 2 | | | |
| Male | 491 | 79.3 | 438 | 79.3 | 61 | 55.0 | 377 | 85.5 | 44 | | 3 | | 6 | | | |
| All English Texts | | | | | | | | | | | | | | | | |
| Female | 406 | 14.4 | 277 | 10.7 | 111 | 32.0 | 266 | 11.3 | 23** | | 11 | | 5 | | | |
| Male | 2415 | 85.6 | 2323 | 89.3 | 236 | 68.0 | 2087 | 88.7 | 71 | | 15 | | 6 | | | |

widows. Occasional references are made to workers, weavers, food gatherers, and dancers.

Tests of significance were done on the sample since it is definitely a sample. On Table 5, where the total number of beings is over 100, the pairs of figures have been percentaged. In all these cases where we have percentaged and in the cases where there are asterisks, the difference observed was statistically significant at better than the .001 level of significance using a chi-square goodness-of-fit test with one degree of freedom.

Table 6 shows that in one area (i.e., human children in French books), there are almost as many girls as boys. This is the only exception to the overall pattern of underrepresentation of females.

FEMALE BEINGS ARE SERIOUSLY UNDERREPRESENTED AS IMPORTANT CHARACTERS IN BOTH ENGLISH AND FRENCH TEXTS APPROVED FOR USE IN ONTARIO.

**Interpretation of Table 7, of important characters by level, is fairly straightforward. In no case where a** female-male comparison can be made (e.g., human children at the Primary level), is there a resemblance of equal representation. The pattern is the same as has been observed in other studies.

AS GRADE LEVEL GOES UP, COMPARATIVE REPRESENTATION OF

Table 7

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS AT DIFFERENT GRADE LEVELS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Primary | | | | | | | | | | | | | | | | |
| Female | 97 | 32.6 | 80 | 34.2 | 46 | 36.2 | 34 | 31.8 | 14** | | 2 | | | | | |
| Male | 201 | 67.4 | 154 | 65.8 | 81 | 63.8 | 73 | 68.2 | 38 | | 5 | | | | | |
| Junior | | | | | | | | | | | | | | | | |
| Female | 210 | 27.8 | 184 | 28.2 | 86 | 36.1 | 98 | 23.6 | 15** | | 8 | | | | | |
| Male | 545 | 72.2 | 469 | 71.8 | 152 | 63.9 | 317 | 76.4 | 63 | | 6 | | | | | |
| Intermediate | | | | | | | | | | | | | | | | |
| Female | 220 | 17.4 | 213 | 17.2 | 51 | 40.5 | 162 | 14.6 | 4** | | | | | | | |
| Male | 1044 | 82.6 | 1023 | 82.8 | 75 | 59.5 | 948 | 85.4 | 14 | | 6 | | | | | |
| Senior | | | | | | | | | | | | | | | | |
| Female | 162 | 14.2 | 151 | 13.4 | 17 | | 134 | 12.6 | 1 | | 2 | | | | | |
| Male | 980 | 85.8 | 976 | 86.6 | 48 | | 928 | 87.4 | | | 4 | | | | | |
| Senior Honours | | | | | | | | | | | | | | | | |
| Female | 71 | 6.6 | 67 | 6.3 | 9 | | 58 | 5.5 | | | | | | | | |
| Male | 998 | 93.4 | 998 | 97.3 | 8 | | 990 | 94.5 | | | | | | | | |

Table 8

NUMBER OF FEMALE AND MALE IMPORTANT CHARACTERS IN READERS REPORTED BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings | | | | Human | | Children | | Adults | | Animals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Ladan and Miller | 1975 | Story | 90% of texts authorized by Alberta Dept. of Education--random selection | | | | | 30.0% | | | | | | | |
| Ontario | | | | | | | | | | | | | | | |
| Wright | May 1975 | Characters | Four most frequently used reader series in Grades 1,2,3 in North York Elementary Schools | 42<br>14.9% | 239<br>85.1% | | | | | 185<br>28.1% | 474<br>71.9% | 68<br>21.9% | 243<br>78.1% | | |
| Alberta | | | | 19.2% | 80.8% | | | | | | | | | | |
| Cullen | 1972 | Stories | BEYOND THE HORIZON in Ginn Basic Readers | 9<br>22.5% | 31<br>77.5% | | | | | | | | | | |
| | | Stories | STORIES OF FUN AND ADVENTURE in Young Canada Readers Series, Nelson | 8<br>22.2% | 27<br>75.0% | | 1<br>2.8% | | | | | | | | |

Table 8 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings | | | | Human | | Children | | Adults | | Animals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Cullen (cont'd) | | | Poems, Grades 4-6 in Young Canada Readers Series, Nelson | 10<br>9.0% | 41<br>36.9% | | 60<br>54.1% | | | | | | | | |
| | | Stories | | ?<br>(Total | 37<br>40) | | | | | | | | | | |
| | | Stories | STORIES OLD AND NEW in Canadian Reading Development Stories Series, Copp Clark | 9<br>22.5% | 31<br>77.5% | | | | | | | | | | |
| | | | NEW PEOPLE AND PROGRESS in New Curriculum Foundation Series, Gage | 4<br>9.8% | 35<br>85.4% | 2<br>4.9% | Unspecified | | | | | | | | |
| Ladan and Miller | 1975 | Story | 90% of texts authorized by Alberta Dept. of Education--Random Selection Grades 1-6 | | | | | Range<br>16-32% | ? | | | | | | |
| British Columbia | | | | | | | | | | | | | | | |
| Preston | Jan. 1972 | Stories | Grades 1-7 B.C. Prescribed Canadian Reading Development and Language Patterns Series | ? | 18 | (29 Grade 2 stories) | | | | | | | | | |
| | | | | 3 | ? | (22 Grade 2 stories) | | | | | | | | | |
| | | | | 3<br>60.0% | 2<br>40.0% | (23 Grade 3 stories) | | | | | | | | | |
| | | | | ? | 27 | (43 Grade 4 stories) | | | | | | | | | |

Table 8 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Preston (cont'd) |  |  |  | 5<br>15.6% | 27<br>84.4% | (36 Grade 5 stories) |  |  |  |  |  |  |  |  |  |
| Status of Women Council Vancouver Education Action Group | April 1973 | Characters | Copp Clark and J.M. Dent Readers Grades 1-6 | 5<br>19.2% | 10<br>38.5% | 11<br>42.3% | 0 | (Grade 1, 26 stories) |  |  |  |  |  |  |  |
|  |  |  |  | 11<br>21.6% | 35<br>68.6% | 2<br>3.9% | 3<br>5.9% | (Grade 2, 46 stories) |  |  |  |  |  |  |  |
|  |  |  |  | 2<br>4.9% | 22<br>53.7% | 5<br>12.2% | 12<br>29.3% | (Grade 3, 41 stories and poems) |  |  |  |  |  |  |  |
|  |  |  |  | 7<br>16.3% | 27<br>62.8% | 2<br>4.6% | 7<br>16.3% | (Grade 4, 43 stories) |  |  |  |  |  |  |  |
|  |  |  |  | 6<br>17.1% | 25<br>71.4% | 4<br>11.4% | 0 | (Grade 5, 36 stories) |  |  |  |  |  |  |  |
|  |  |  |  | 5<br>19.2% | 21<br>80.8% | 0 | 0 | (Grade 6, 26 stories) |  |  |  |  |  |  |  |
| Quebec |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)--24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary Schools--78 Readers |  |  |  |  | 1042<br>30.2%<br>includes young adults | 2407<br>69.8% | 669<br>38.7% | 1061<br>61.3% | 334<br>21.5% | 1222<br>78.5% |  |  |

Table 8 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| U.S. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Child, Potter, and Levine |  | Thema | All U.S. general 3rd Grade readers published 1930-1945 | M-F Comparison<br>27.0%<br>582<br>21.8% | 73.0%<br>1519<br>56.9% | 567<br>21.2% |  |  |  |  |  |  |  |  |  |
| Frasher and Walker | May 1972 | 734 Stories | 1st and 2nd Grade reading textbooks in Georgia | 108<br>14.7% | 341<br>46.5% | 285<br>none or shared | 38.8% |  |  |  |  |  |  |  |  |
|  |  |  | New editions |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Scott, Foresman | 7<br>14.9% | 40<br>85.1% |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Ginn & Co. | 14<br>19.2% | 59<br>80.8% |  |  |  |  |  |  |  |  |  |  |
| Graebner | Oct. 1973 | Stories | 283 stories in 1962-63 Scott, Foresman and Ginn 1961 editions Elementary | 41<br>14.5% | 101<br>35.7% | 120<br>42.4% | 21<br>7.4% |  |  |  |  |  |  |  |  |
|  |  |  | 271 stories in Scott, Foresman 1971 and Ginn 1969 editions Elementary | 36<br>12.0% | 108<br>35.9% | 80<br>26.6% | 77<br>25.6% |  |  |  |  |  |  |  |  |
| Taylor | Oct. 1973 | Stories | Calif. State adopted readers Grades 1-6 | 25.0% | 75.0% |  |  |  |  |  |  |  |  |  |  |

Table 8 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings | | | | Human | | Children | | Adults | | Animals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Women on Words and Images | 1972 | Stories | 134 Elementary school readers in use in 3 suburban New Jersey towns (14 publishers) | 411<br>27.8% | 1068<br>72.2% | | | 356<br>27.4% | 942<br>72.6% | | | | | | |
| | | | | (Total) | | | | | | | | | | | |
| | | | | 57<br>21.3% | 210<br>78.7% | | | | | 319<br>20.8% | 823<br>53.7% | 37<br>23.7% | 119<br>76.3% | 55<br>30.4% | 126<br>69.6% |
| | | | | (Folk Fantasy)<br>ONLY | | | | | | (Both)<br>390<br>25.5% | | | | | |

FEMALES TO MALES AS IMPORTANT CHARACTERS GOES DOWN IN TEXTS APPROVED FOR USE IN ONTARIO.

### Readers

An examination of Table 8 shows the pattern of the results of the various studies on readers in Ontario and elsewhere. Important characters in this sub-group are also disproportionately male. One exception stands out, and that is the pre-primer study by Ladan and Miller (1975) who found 60 percent of the characters are female. Immediately after that figure of 60 percent, for which we do not know the base, the figure drops to the thirties and goes down from there as grade level goes up.

Readers are books with story and poem content, with occasional exercises. Language arts books include readers and a number of other kinds of language texts aimed at development of creative writing and language skills in a student's first language. Spellers and dictionaries fell in the sample and were analyzed, although dictionaries yielded little codable material, especially for important characters.

All of the female-male comparisons in Table 9 show underrepresentation of female beings. In one case--human children in all language arts books--the percentage of girls is almost 40 percent. In all other comparisons females are one-fifth to one-third of the important characters.

Table 9

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF ONTARIO LANGUAGE ARTS TEXTS (INCLUDING READERS)

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| **Readers** | | | | | | | | | | | | | | | | |
| **Female** | 164 | 25.3 | 132 | 31.2 | 67 | 33.0 | 65 | 20.3 | 24 | 22.9 | 6 | | | | 2 | |
| **Male** | 485 | 74.7 | 291 | 68.8 | 136 | 67.0 | 255 | 79.7 | 81 | 77.1 | 7 | | 6 | | | |
| **All Language Arts Texts** | | | | | | | | | | | | | | | | |
| **Female** | 292 | 28.1 | 239 | 28.2 | 115 | 37.3 | 124 | 23.0 | 33 | 22.8 | 10 | | 7 | | 4 | |
| **Male** | 746 | 71.9 | 609 | 71.8 | 193 | 62.7 | 416 | 77.0 | 112 | 77.2 | 14 | | 11 | | | |

## Mathematics and Second Language Texts

As previously mentioned, these two types of texts are grouped because of the similarity of the analysis of exercise data. Mathematics exercises and language exercises tend to mention individuals who are doing something and do not put them in context, as in story or social studies material. There is, however, usually story or social studies type material in most advanced language texts, in addition to the exercises. It is this type of print material that is analyzed in this section on important characters.

There are no known studies of second language texts. There are some studies of arithmetic texts which report the same ratios with which the reader is already familiar. The analysis of mathematics texts does not allow for an "important character" count. Table 10 shows the data from other studies of mathematics texts. Table 11 shows the data from the study done here of second language texts.

Second language books in this sample are those which teach French, German, Russian, and Spanish to English-speaking students. Most of the exercise material in these books will not show up in this table. Unfortunately, the number of observations in the human children column is too limited to draw conclusions, because it shows a break from the usual findings in the direction of equal representation (28 girls, 35 boys).

Table 10

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN MATHEMATICS TEXTS REPORTED BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Math and 2nd Language |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)--24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools (68 Math texts) |  |  |  |  | 1383<br>27.6%<br>includes young adults | 3625<br>72.4% | 998<br>35.3% | 1828<br>64.7% | 357<br>17.5% | 1689<br>82.5% |  |  |
| Fleming | Fall 1971 | Characters | Gage and Copp Clark Arithmetic Series - 7 problem exercises in each grade |  |  |  |  |  | Grade 4 - | 16<br>32.6% | 33<br>67.4% |  |  |  |  |
|  |  |  |  |  |  |  |  |  | Grade 8 - | 7<br>18.0% | 32<br>82.0% |  |  |  |  |

Table 11

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN ESSAY OR STORY MATERIAL IN A SAMPLE OF PAGES FROM A SAMPLE OF ONTARIO SECOND LANGUAGE TEXTS

| Sex | All Beings n | All Beings % | All Humans n | All Humans % | Human Children n | Human Children % | Human Adults n | Human Adults % |
|---|---|---|---|---|---|---|---|---|
| Female | 86 | 29.3 | 86 | 29.5 | 28 | | 58 | 25.3 |
| Male | 206 | 70.7 | 206 | 70.5 | 35 | | 171 | 74.7 |

Social Studies and Health Texts

Using only story material in social studies and personality development texts, Dunnigan (1975) shows that health texts are perhaps the one area in which females get almost equal treatment. Since the entire population of books approved for use in Quebec is included in the sample, no questions of chance or probability are relevant. In fact, 45.2 percent of the important characters in health texts are female. Given that the texts aim at affecting the behaviour of the individual reader, the authors of health texts are acutely aware that half the readers are girls and that they must be shown same-sex models.

In this study, social studies texts show one of the strongest patterns of underrepresentation of females, and health texts show the fairest pattern. Unfortunately, the observations from health texts are too small in number to be convincing, but they do follow the pattern observed in the Quebec study.

Table 12

NUMBER OF FEMALE AND MALE IMPORTANT CHARACTERS IN SOCIAL STUDIES AND HEALTH TEXTS IN STUDIES BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)--24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools (8 social science texts) |  |  | Social Science - |  | 36<br>15.2%<br>includes young adults | 201<br>84.8% | 11 | 18 | 25<br>12.0% | 183<br>88.0% |  |  |
|  |  |  |  |  |  |  | Health - | 164<br>45.2% | 199<br>54.8% | 56<br>45.2% | 68<br>54.8% | 54<br>36.7% | 93<br>63.3% |  |  |

Table 13

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF ONTARIO SOCIAL STUDIES AND HEALTH TEXTS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Social Studies Texts | | | | | | | | | | | | | | | | |
| Female | 166 | 12.4 | 158 | 11.9 | 30 | 28.8 | 128 | 10.5 | 1 | | 2 | | 1 | | 4 | |
| Male | 1173 | 87.6 | 1169 | 88.1 | 74 | 71.2 | 1095 | 89.5 | 1 | | 3 | | | | | |
| Health Texts | | | | | | | | | | | | | | | | |
| Female | 10 | | 10 | | 8 | | 2 | | | | | | | | | |
| Male | 14 | | 14 | | 7 | | 7 | | | | | | | | | |

Table 14

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN SCIENCE TEXTS STUDIED BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings | | | | Human | | Children | | Adults | | Animals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)-- 24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools (40 science texts) | | | | | 281<br>15.9%<br>includes young adults | 1809<br>84.1% | 193<br>33.9% | 376<br>66.1% | 64<br>6.9% | 864<br>93.1% | | |

## Science and Technology Texts

Again the Quebec study showed the best data on this type of text. Their results are shown in Table 14. Women fared particularly badly in science texts in Quebec (Dunnigan 1975), and science texts in Ontario show the same pattern. Women are featured less than 10 percent of the time in each case.

Table 15

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF ONTARIO SCIENCE AND TECHNOLOGY TEXTS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| Female | 8 | 7.9 | 8 | 7.9 | 1 | | 7* | |
| Male | 93 | 92.1 | 93 | 92.1 | 7 | | 86 | |

## Business and Economics Texts

In this study business and economics texts featured 104 individuals. Three were boys, 24 were women and 80 were men.

## Religion Texts

One study included a type of text that does not fit into the categories discussed above. Dunnigan (1975) analyzed religion books approved for use in Quebec. She only includes fictional characters, but the results are in Table 16.

## Summary of Findings in Ontario Sample of Texts

The pattern observable in Ontario texts is similar to that which has been observed elsewhere. In cases where there are enough observations to warrant calculating a percentage (i.e., where there are at least 100 observations) the females are underrepresented. In a few cases in which the situation is one of near equality (i.e., human children in second language texts and most categories of beings in health texts), there are not enough observations to draw any definite conclusions.

FEMALE BEINGS ARE SERIOUSLY UNDERREPRESENTED IN TEXTS APPROVED FOR USE IN ONTARIO IN ALL SUBJECT AREAS. THE UNDERREPRESENTATION IS MOST SERIOUS IN SOCIAL STUDIES AND SCIENCE TEXTS.

## Changes Over Time

A look at Table 17 will show the pattern of important char-

Table 16

NUMBER OF FEMALE AND MALE IMPORTANT CHARACTERS IN RELIGION TEXTS IN STUDIES BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings F | Beings M | Beings Both | Beings Neither | Human Children F | Human Children M | Adults F | Adults M | Animals F | Animals M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)--24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools (17 religion texts) | | | | | 175<br>33.8%<br>includes young adults | 3[illegible]<br>66.2% | 72<br>33.2% | 145<br>66.8% | 53<br>24.9% | 160<br>75.2% | | |

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Table 17

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS SINCE 1947

| Year | Sex | All Beings n | All Beings % | All Humans n | All Humans % | Human Children n | Human Children % | Human Adults n | Human Adults % | Animals n | Animals % | Imaginary Creatures n | Imaginary Creatures % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1974 | Female | 59 | 22.0 | 56 | 22.0 | 16* | 43.2 | 49 | 17.3 | 1 | | | |
| | Male | 209 | 78.0 | 199 | 78.0 | 21 | 56.8 | 178 | 81.7 | 6 | | 2 | |
| 1973 | Female | 47 | 18.8 | 45 | 18.9 | 13* | 35.1 | 32 | 15.9 | 2 | | | |
| | Male | 203 | 81.2 | 193 | 81.1 | 24 | 64.9 | 169 | 84.1 | 7 | | 1 | |
| 1972 | Female | 74 | 26.5 | 68 | 26.4 | 25* | 41.7 | 43 | 21.8 | 5 | | 1 | |
| | Male | 205 | 73.5 | 190 | 73.6 | 35 | 58.3 | 155 | 78.2 | 13 | | 2 | |
| 1971 | Female | 69 | 14.6 | 66 | 14.3 | 10* | 34.5 | 56 | 12.9 | 3 | | | |
| | Male | 404 | 85.4 | 397 | 85.7 | 19 | 65.5 | 378 | 87.1 | 6 | | 1 | |
| 1970 | Female | 34 | 10.0 | 30 | 9.3 | 10 | 24.4 | 20 | 7.1 | 3 | | | |
| | Male | 306 | 90.0 | 293 | 90.7 | 31 | 75.6 | 262 | 92.9 | 9 | | 3 | |
| 1970 to 1974 | Female | 283 | 17.6 | 265 | 17.2 | 74 | 36.3 | 193 | 14.3 | 14 | 25.5 | 1 | |
| | Male | 1327 | 82.4 | 1272 | 82.8 | 130 | 63.7 | 1142 | 85.7 | 41 | 74.5 | 9 | |
| 1965 to 1969 | Female | 190 | 14.4 | 174 | 14.1 | 68 | 36.9 | 106 | 10.1 | 12 | 16.9 | 2 | |
| | Male | 1132 | 85.6 | 1064 | 85.9 | 116 | 63.1 | 948 | 89.9 | 59 | 83.1 | 3 | |
| 1960 to 1964 | Female | 83 | 15.3 | 59 | 11.8 | 15 | 25.4 | 44 | 9.9 | 5 | | 9 | |
| | Male | 459 | 84.7 | 443 | 88.2 | 44 | 74.6 | 399 | 90.1 | 10 | | 6 | |
| 1947 to 1959 | Female | 72 | 29.4 | 69 | 29.4 | 29* | 44.6 | 40 | 23.5 | 3 | | | |
| | Male | 173 | 70.6 | 166 | 70.6 | 36 | 55.4 | 130 | 76.5 | 5 | | 1 | |

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acter representation in texts over time. Percentages in those cells where there are less than 100 cases should be taken as suggestive only, but the suggestion is that the representation of females, while not equal, was somewhat more favourable in the 1950s than at any time since then. This corresponds with the changes in the primary texts which were aimed at motivating boys with reading difficulties. There is some suggestion, but the evidence is mixed, that a change toward equal representation is occurring.

## Frequency of Females and Males as Important Characters in Literature Used in Schools

### Picture Books

The question of the distribution of male and female important characters is answered in the same way as with the texts, although the ratios seldom get as low as they do in some types of texts. The results of those studies which reported important character figures are included in Table 18.

### Changes Over Time

The evidence from the Fischer and Carter study suggests that in books published before 1972 there was somewhat less stereotyping than in those published between 1972 and 1975. They do, however, state that they could not test the statis-

Table 18

NUMBER AND PERCENTAGE OF FEMALE AND MALE IMPORTANT CHARACTERS IN PICTURE BOOKS IN STUDIES OF OTHERS

| Author | Pub Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Canadian Studies |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fischer and Carter | Unpub. | Characters | Two samples of picture and easy reader books from an Ontario library | 57<br>33.7% | 112<br>66.3% | (1972) | 38 | 37 | 69 | 14 | 31 | 23 | 38 | 19 | 41 |
|  |  |  |  | 60<br>31.2% | 132<br>68.8% | (1975) | 37 | 37 | 84 | 13 | 41 | 24 | 43 | 22 | 47 |
| Hunter | Nov. 1972 | Characters | All picture books in one school library collection with children in plausible situations. 255 books. Not a sample. |  |  |  |  |  |  | 116<br>45.0% | 202 |  |  |  |  |
| U.S. Studies |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fem. on Child Lit. | Jan. 1971 | Characters | All Newberry Award winners 49 books |  |  |  |  |  |  | 25.0% | 75.0% |  |  |  |  |
|  |  |  | American Library Association NOTABLE BOOKS of 1969 Presumably all children's books |  |  |  |  |  |  | 33.0% | 66.0% |  |  |  |  |

Table 18 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| U.S. Studies (cont'd) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fem. on Child Lit. (cont'd) |  |  | Child Study Association Recommendation for 1969 |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 1) Boys and girls category |  |  |  |  |  |  | 33.0% | 66.0% |  |  |  |  |
|  |  |  | 2) Sports |  |  | 100.0% |  |  |  |  |  |  |  |  |  |
| Prida | Spring 1972 |  | 100 children's books on Puerto Rican themes. Not a sample. |  |  |  |  |  |  | 18<br>36.0% | 32<br>64.0% |  |  |  |  |
| Weitzman | May 1972 |  | Caldecott winners and runners-up since 1938 | 10<br>35.7% | 14<br>50.0% |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | (Indeterminate 4)<br>14.3% |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Caldecott winners and runners-up 1967-71 | 2<br>22.2% | 7<br>77.8% |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Caldecott winners and runners-up prior to 1967 | 9<br>45.0% | 11<br>55.0% |  |  |  |  |  |  |  |  |  |  |

Table 18 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| U.S. Studies (cont'd) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Weitzman (con'td) |  |  | Newberry Award winners since 1922 | 11<br>22.4% | 31<br>6[illegible].3% | 4<br>8.2% |  |  |  |  |  |  |  |  |  |
|  |  |  | (Indeterminate 3) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Little Golden Books selling over 3 million copies | 3<br>37.5% | 5<br>62.5% |  |  | 3<br>27.3% | 8<br>72.7% |  |  |  |  | 2<br>28.6% | 5<br>71.4% |

tical significance of the difference and it may not be socially significant in any case because it is small.

## Intermediate Literature

Only one study gives us information relevant to the important characters of literature used at the intermediate level. In a U.S. study, Wiik (1973) looked at fifteen literature anthologies frequently used by Grades 7, 8, and 9 in one particular junior high school. Altogether there were 450 selections analyzed, and of those that had humans as important characters, 87 had female humans as important characters and 411 had male characters. That means that 17.5 percent of the human important characters were female. Of thirty animals who were considered important characters, one was a female.

## Senior Literature

In this study of literature used in Grades 10, 11, and 12 in Ontario schools it is possible to ascertain the number of female and male important characters using lists of characters in plays and reviewed characters in critical reviews of novels. In addition, the sex of author was found to be of interest, so a breakdown is presented in Table 19.

Female authors portray important characters as male slightly more often than as female, while male authors use important male characters almost four times as frequently as important female characters. Overall, the ratio of male to female important characters is very close to three to one.

Table 19

NUMBER OF IMPORTANT FEMALE AND MALE CHARACTERS BY SEX OF AUTHOR IN BOOKS USED IN ENGLISH LITERATURE COURSES IN GRADES 10, 11, AND 12 IN A SAMPLE OF SCHOOLS IN ONTARIO

| Character | Author | | |
|---|---|---|---|
| | Female | Male | Total |
| Female | 13 | 58 | 71 |
| Male | 17 | 209 | 226 |

Because this is a sample of novels and plays, it is possible to single out central characters. Given the rather overwhelming preponderance of male writers, it is not surprising that the central character of the story is almost always a male. Generally, there is one character who is unambiguously the central character. Occasionally, as for instance in a love story, it may be argued that there are two. If, however, there was any ambiguity as to which character was more central, both were described as central characters. Hence, a novel or play could be designated as having central characters who were male, female, or both.

The central characters were male 96 percent of the time and female 22 percent of the time. When there was only one central character, or central characters of the same sex, the percentages become 78 percent male and 4 percent female. In the present sample, no male author ever wrote a story with only female central characters. Those stories with both male and female characters could, it is submitted, be argued to focus considerably more on the male than on the female. The female authors might be said to show somewhat more balance, but are so few as to preclude meaningful generalization.

Table 20

NUMBER OF FEMALE AND MALE CENTRAL CHARACTERS BY SEX OF AUTHOR IN BOOKS USED IN ENGLISH LITERATURE COURSES IN GRADES 10, 11, AND 12 IN A SAMPLE OF SCHOOLS IN ONTARIO

| Central Characters | Author | |
|---|---|---|
| | Female | Male |
| Female | 2 | 0 |
| Male | 1 | 38 |
| Both | 1 | 8 |

## Frequency of Females and Males as Important Characters in Video in Ontario

The ratio of females to males was about one to two. There were 110 important females to 219 important males. Ninety-four of the 180 humans were females.

## Frequency of Females and Males as Important Characters in Kits in Circular 15

Kits in the sample were exclusively male domains. Not one important female being of any kind was found. Males were plentiful--135 men and 2 boys. One female group and 2 non-specific female beings were mentioned.

## Frequency of Females and Males as Important Characters in Other Media and Curriculum Materials

The Guidelines examined had too few cases of sex specific references to present a count. Most were neutral in tone.

## Frequency of Females and Males as Identifiable Characters

The basis for accumulating figures on the occurrence of identifiable characters is that all of these characters may be represented as doing actions or having attitudes or attributes that may be sex role stereotyped. Most studies count important characters to show visibility, but then count the actions of any characters to show stereotyping. Because characters are not equally represented in the sex and age categories, the numbers of identifiable characters is used to weight the activity figures for a more accurate analysis. This process is discussed in greater detail in the section on page 142.

## Identifiable Characters in Textbooks

Two textbook studies had relevant information on this category of visiblity measure--the Quebec study by Dunnigan (1975) and the North York study by Wright (1975). Comparison of Table 21, which follows, and the tables in the section on page 88, Important Characters in Textbooks, shows that the texts examined in Quebec have a slightly better female-male balance of identifiable characters than important characters. Exceptions to this are in those cases which were cited previously as having a more favourable balance. Nothing changes the fact, however, that almost no cases approach equality. Hence, any interpretation of the difference between the female-male balance and the relative importance (important versus identifiable) of characters is not very meaningful.

## Frequency of Females and Males in Illustrations

A third visibility measure is the number of female and male models in illustrations. The authors have prepared a set of tables for illustrations similar to those for important and identifiable characters, but as they repeat the previous patterns the reader will be spared the actual tables.

Table 21

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN TEXTBOOKS STUDIED BY OTHERS

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Dunnigan (Quebec study) | Sept. 1975 | Identifiable fictional human characters (in stories mentioned more than once)--24,312 characters | 225 texts in French approved by Prov. Gov't for 1974-75 in Quebec Elementary and Secondary schools | In all texts - |  |  |  | 7873<br>32.4%<br>includes young adults | 16439<br>67.6% | 5022<br>40.0% | 7546<br>60.0% | 2324<br>22.6% | 7948<br>77.4% |  |  |
|  |  |  |  | Elementary - (154 texts) |  |  |  | 6189<br>35.9%<br>includes young adults | 11051<br>64.1% | 4310<br>42.0% | 5948<br>58.0% | 1702<br>26.0% | 4851<br>74.0% |  |  |
|  |  |  |  | Secondary - (71 texts) |  |  |  | 1685<br>23.8%<br>includes young adults | 5388<br>76.2% | 712<br>30.8% | 1598<br>69.2% | 622<br>16.7% | 3097<br>83.3% |  |  |
|  |  |  |  | Readers - (78 texts) |  |  |  | 2763<br>35.5%<br>includes young adults | 5015<br>64.5% | 1656<br>41.5% | 2332<br>58.5% | 1011<br>29.1% | 2468<br>70.9% |  |  |
|  |  |  |  | Math - (68 texts) |  |  |  | 3209<br>32.2%<br>includes young adults | 6750<br>67.8% | 2559<br>39.6% | 3907<br>60.4% | 593<br>18.0% | 2706<br>82.0% |  |  |
|  |  |  |  | Social studies - (8 texts) |  |  |  | 164<br>22.8%<br>includes young adults | 554<br>77.2% | 31 | 62 | 122<br>19.9% | 490<br>80.1% |  |  |
|  |  |  |  | Health - |  |  |  | 485<br>44.8%<br>includes young adults | 597<br>55.2% | 185<br>42.6% | 249<br>57.4% | 155<br>36.4% | 259<br>62.6% |  |  |

Table 21 (cont'd)

| Author | Pub. Date | Unit | Sample | Beings |  |  |  | Human |  | Children |  | Adults |  | Animals |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| Dunnigan (Quebec study) (cont'd) |  |  |  |  |  |  | Science - (40 texts) | 613<br>20.6% | 2360<br>79.4% | 358<br>38.0% | 584<br>62.0% | 203<br>12.1% | 1479<br>87.9% |  |  |
|  |  |  |  |  |  |  |  | includes young adults |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | Religion - (17 texts) | 640<br>35.5% | 1163<br>64.5% | 234<br>36.2% | 412<br>63.8% | 240<br>30.5% | 546<br>69.5% |  |  |
| Wright (North York study) | May 1975 | Characters | Most used Grades 1,2,3 readers in North York | 42<br>15.0% | 239<br>85.0% |  |  |  |  | 239<br>32.3% | 501<br>67.7% | 122<br>26.2% | 343<br>73.8% |  |  |

Table 22

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Non-groups | | | | | | | | | | | | | | | | |
| Female | 924 | 18.2 | 839 | 17.5 | 251 | 37.5 | 588 | 14.2 | 40 | 21.7 | 18 | | 8 | | 10 | |
| Male | 4158 | 81.8 | 3959 | 82.5 | 418 | 62.5 | 3541 | 85.8 | 144 | 78.3 | 21 | | 14 | | 20 | |
| Indeterminate | 369 | | 201 | | 29 | | 172 | | 143 | | 9 | | 16 | | | |
| Specific Crowds or Groups | | | | | | | | | | | | | | | | |
| Female | 51 | 13.6 | 47 | 12.9 | 11 | | 36 | 10.7 | 3 | | 1 | | 0 | | | |
| Male | 324 | 86.4 | 318 | 87.1 | 18 | | 300 | 89.3 | 3 | | 2 | | 1 | | | |
| Mixed | 250 | | 211** | | 22 | | 105 | | 37 | | 2 | | 0 | | | |
| Generalized or Generic Beings | | | | | | | | | | | | | | | | |
| A non-specific individual | | | | | | | | | | | | | | | | |
| Female | 32 | 8.8 | 32 | 8.8 | 5 | | 27 | 7.6 | 0 | | | | | | | |
| Male | 333 | 91.2 | 331 | 91.2 | 5 | | 326 | 92.4 | | | | | | | | |
| Some non-specific individuals in a category or group | | | | | | | | | | | | | | | | |
| Female | 8 | 7.8 | 8 | 7.8 | 1 | | 7 | | 0 | | | | | | | |
| Male | 96 | 92.3 | 94 | 92.1 | 7 | | 87 | | 2 | | | | | | | |
| Mixed | 55 | | 38 | | 4 | | 34 | | 17 | | | | | | | |

Table 22 (cont'd)

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthro-pomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Generalized or Generic Beings (cont'd) | | | | | | | | | | | | | | | | |
| All beings in a category | | | | | | | | | | | | | | | | |
| Female | | | 88 | 16.5 | 19 | | 69 | 13.9 | | | | | | | | |
| Males | | | 446 | 83.5 | 19 | | 427 | 86.1 | 1 | | | | | | | |
| Mixed | | | 169 | | 16 | | 153 | | | | | | | | | |

*All female-male comparisons are statistically significantly different in those cases where percentages have been done. Where they have not been done, an asterisk has been used to indicate statistically significant differences.

**There are crowds included in this count that include adults and children in the same crowd.

Table 23

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTBOOKS IN ENGLISH AND FRENCH

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthro-pomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| All French Texts | | | | | | | | | | | | | | | | |
| Female | 166 | 22.3 | 151 | 22.7 | 54 | 40.3 | 97 | 18.3 | 12 | | 1 | | 2 | | | |
| Male | 579 | 77.7 | 514 | 77.3 | 80 | 59.7 | 434 | 81.7 | 17 | | 5 | | 6 | | 2 | |
| All English Texts | | | | | | | | | | | | | | | | |
| Female | 654 | 16.5 | 579 | 15.3 | 165 | 35.1 | 414 | 12.5 | 28 | 23.7 | 18 | | 6 | | 12 | |
| Male | 3316 | 83.5 | 3204 | 84.7 | 305 | 64.9 | 2899 | 87.5 | 90 | 76.3 | 15 | | 8 | | | |

Table 24

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTBOOKS AT DIFFERENT GRADE LEVELS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Primary | | | | | | | | | | | | | | | | |
| Female | 140 | 33.1 | 119 | 35.4 | 63 | 38.0 | 56 | 32.9 | 17** | | 3 | | | | | |
| Male | 283 | 66.9 | 217 | 64.6 | 103 | 62.0 | 114 | 67.1 | 53 | | 5 | | | | | |
| Junior | | | | | | | | | | | | | | | | |
| Female | 280 | 28.8 | 248 | 29.0 | 103 | 35.3 | 145 | 25.7 | 17** | | 12 | | | | | |
| Male | 693 | 71.2 | 608 | 71.0 | 189 | 64.7 | 419 | 74.3 | 72 | | 6 | | | | | |
| Intermediate | | | | | | | | | | | | | | | | |
| Female | 327 | 17.9 | 316 | 17.6 | 78* | 42.9 | 238 | 14.8 | 5 | | 2 | | | | | |
| Male | 1503 | 82.1 | 1477 | 82.4 | 104 | 57.1 | 1373 | 85.2 | 17 | | 8 | | | | | |
| Senior | | | | | | | | | | | | | | | | |
| Female | 302 | 15.1 | 277 | 14.1 | 30* | | 247 | 13.1 | 1 | | 2 | | | | | |
| Male | 1699 | 84.9 | 1692 | 85.9 | 58 | | 1634 | 86.9 | 3 | | 4 | | | | | |
| Senior Honours | | | | | | | | | | | | | | | | |
| Female | 85 | 7.4 | 80 | 7.0 | 9 | | 71 | 6.3 | | | | | | | | |
| Male | 1066 | 92.6 | 1065 | 93.0 | 9 | | 1056 | 93.7 | 1 | | | | | | | |

Table 25

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTBOOKS IN DIFFERENT SUBJECT AREAS

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthro-pomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Readers | | | | | | | | | | | | | | | | |
| Female | 234 | 26.9 | 193 | 27.0 | 90 | 34.9 | 103 | 22.6 | 27 | 21.3 | 11 | | | | 2 | |
| Male | 636 | 73.1 | 521 | 73.0 | 168 | 65.1 | 353 | 77.4 | 100 | 78.7 | 8 | | 8 | | | |
| All Language Arts Texts | | | | | | | | | | | | | | | | |
| Female | 398 | 29.3 | 334 | 29.0 | 143 | 37.4 | 191 | 24.8 | 37 | 21.4 | 16** | | 6 | | 4 | |
| Male | 962 | 70.7 | 817 | 71.0 | 239 | 62.6 | 578 | 75.2 | 136 | 78.6 | 2 | | 13 | | | |
| All Second Language Texts | | | | | | | | | | | | | | | | |
| Female | 122 | 30.7 | 121 | 30.9 | 35* | 46.1 | 86 | 27.3 | 1 | | | | | | | |
| Male | 275 | 69.3 | 270 | 69.1 | 41 | 53.9 | 229 | 72.7 | 4 | | 1 | | | | | |
| Social Studies Texts | | | | | | | | | | | | | | | | |
| Female | 285 | 14.2 | 261 | 13.2 | 49 | 32.5 | 212 | 11.6 | 2 | | 2 | | 2 | | 18 | |
| Male | 1725 | 85.8 | 1720 | 86.8 | 102 | 67.5 | 1618 | 88.4 | 2 | | 3 | | | | | |
| Health Texts | | | | | | | | | | | | | | | | |
| Female | 29 | | 29 | | 17 | | 12** | | | | | | | | | |
| Male | 43 | | 41 | | 14 | | 27 | | | | | | | | | |
| Science Texts | | | | | | | | | | | | | | | | |
| Female | 9 | 7.8 | 9 | 7.8 | 1 | | 8 | 7.5 | | | | | | | | |
| Male | 106 | 92.2 | 106 | 82.2 | 7 | | 99 | 92.5 | | | | | | | | |

Table 25 (cont'd)

| Sex | All Beings | | All Humans | | Human Children | | Human Adults | | Animals | | Imaginary Creatures | | Anthropomorphic Inanimate Objects | | Inanimate Objects | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n | % | n | % | n | % |
| **Business and Economics Texts** | | | | | | | | | | | | | | | | |
| Female | 33 | 22.9 | 33 | 22.9 | 1 | | 36 | 25.5 | | | | | | | | |
| Male | 111 | 77.1 | 111 | 77.1 | 6 | | 105 | 74.5 | | | | | | | | |

Table 26

NUMBER AND PERCENTAGE OF FEMALE AND MALE IDENTIFIABLE CHARACTERS IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTBOOKS SINCE 1947

| Year | Sex | All Beings |  | All Humans |  | Human Children |  | Human Adults |  | Animals |  | Imaginary Creatures |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | n | % | n | % | n | % | n | % | n | % | n | % |
| 1974 | Female | 96 | 22.2 | 88 | 21.3 | 22* | 45.8 | 66 | 18.1 | 1 |  | 4 |  |
|  | Male | 336 | 77.8 | 326 | 78.7 | 26 | 54.2 | 300 | 81.9 | 6 |  | 2 |  |
| 1973 | Female | 77 | 17.7 | 75 | 17.8 | 18* | 40.9 | 57 | 15.1 | 2 |  |  |  |
|  | Male | 359 | 82.3 | 346 | 82.2 | 26 | 59.1 | 320 | 84.9 | 10 |  | 1 |  |
| 1972 | Female | 100 | 28.8 | 94 | 29.2 | 35* | 43.8 | 59 | 24.4 | 5** |  | 1 |  |
|  | Male | 247 | 71.2 | 228 | 70.8 | 45 | 56.2 | 183 | 75.6 | 17 |  | 2 |  |
| 1971 | Female | 102 | 16.8 | 86 | 16.3 | 19* | 37.3 | 77 | 14.3 | 5 |  | 1 |  |
|  | Male | 506 | 83.2 | 494 | 83.7 | 32 | 62.7 | 462 | 85.7 | 12 |  |  |  |
| 1970 | Female | 39 | 10.5 | 34 | 9.8 | 11 | 25.6 | 23 | 7.6 | 4** |  |  |  |
|  | Male | 333 | 89.5 | 312 | 90.2 | 32 | 74.4 | 280 | 92.4 | 15 |  | 3 |  |
| 1970 to 1974 | Female | 414 | 19.0 | 387 | 18.5 | 105 | 39.5 | 282 | 15.4 | 17 | 28.3 | 6 |  |
|  | Male | 1765 | 81.0 | 1706 | 81.5 | 161 | 60.5 | 1545 | 84.6 | 43 | 71.4 | 9 |  |
| 1965 to 1969 | Female | 267 | 15.6 | 248 | 15.4 | 95 | 37.8 | 153 | 11.2 | 13 | 16.0 | 3 |  |
|  | Male | 1446 | 84.4 | 1367 | 84.6 | 156 | 62.2 | 1211 | 88.8 | 68 | 84.0 | 3 |  |
| 1960 to 1964 | Female | 142 | 17.5 | 102 | 13.5 | 18 | 26.5 | 84 | 12.2 | 6 |  | 10 |  |
|  | Male | 668 | 82.5 | 652 | 86.5 | 50 | 73.5 | 602 | 87.8 | 10 |  | 6 |  |
| 1947 to 1959 | Female | 106 | 30.1 | 102 | 30.4 | 33* | 39.3 | 69 | 27.4 | 4 |  |  |  |
|  | Male | 246 | 69.9 | 234 | 69.6 | 51 | 60.7 | 183 | 72.6 | 8 |  | 3 |  |

## Frequency of Females and Males in Titles

Another visibility measure is the mention of a female or male name in the title of a book. This is not a useful measure for texts, but it is indicative of visibility in picture books. Weitzman (1972) and Nilsen (1971) looked at titles in picture books and showed the expected pattern. Weitzman and Rizzo (1974) looked at stories in readers and the pattern repeated itself there.

## Variety of Male and Female Adult Models Shown

One of the most important aspects of visibility is the variety of positions that males and females occupy in the media. Many authors have gone to the trouble of investigating the number and variety of positions in texts or literature. Others have gone farther and counted the number of occurrences of each position for each sex.

Some of these findings from other studies are summarized in Table 28 and the usual disproportionate frequencies are obvious. The occurrences of positions in the sample of texts is included in Table 29. The tables speak for themselves. Women are again underrepresented.

In the sample of English literature at the senior level, an unambiguous social position was not readily apparent. Information on those that were discernable is provided in

Table 27

NUMBER AND PERCENTAGE OF FEMALES AND MALES IN TITLES OF STORIES IN PICTURE BOOKS AND READERS IN STUDIES BY OTHERS

| Author | Pub. Date | Sample | Beings | | | | Human | | Children | | Adults | | Animals | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | F | M | Both | Neither | F | M | F | M | F | M | F | M |
| **Readers** | | | | | | | | | | | | | | |
| Weitzman and Rizzo | 1974 | Most widely used series--by sale and usage patterns 1967-72 Grades 1-6 | | | | | | | 35<br>26.0% | 102<br>64.0% | | | | |
| **Picture Books** | | | | | | | | | | | | | | |
| Weitzman and Rizzo | May 1972 | Caldecott winners 1938 to 1971 | 3<br>9.0% | 8<br>24.0% | 1<br>3.0% | 22<br>65.0% | (101%) | | | | | | | |
| | | Caldecott winners and runners-up 1967-1971 | 1<br>5.0% | 8<br>40.0% | 1<br>5.0% | 10<br>50.0% | | | | | | | | |
| | | Little Golden Books selling over 3 million copies | 4<br>14.0% | 9<br>32.0% | 1<br>4.0% | 14<br>50.0% | | | | | | | | |
| | | All Newberry winners 1922-1971 | 6<br>12.0% | 20<br>41.0% | 0 | 23<br>47.0% | | | | | | | | |
| Nilsen | 1971 | All Caldecott winners and runners-up 1951-1970 | | | | | 4<br>22.0% | 14<br>78.0% | 2<br>13.0% | 13<br>87.0% | 2<br>67.0% | 1<br>33.0% | | |

Table 29. While only eleven distinct social positions were evident for female major characters, there were forty-nine for males. However, since there were 226 male major characters to only 71 female major characters, one would expect approximately three times as many different positions for men than women. Although there are approximately four times as many positions for men than for women this could come, for this sample, from chance variation due to sampling. The specific positions assigned to males and females is interesting to consider. By far the most frequent position assigned in terms of absolute frequency was that of soldier, which was assigned exclusively to males. The frequency of this position is somewhat inflated since martial tales tend to have large numbers of characters. However, 10 percent of the stories sampled did have military themes. School-boy stories were almost eleven times more frequent than school-girl stories, a substantial deviation from chance expectation. Women characters were, in absolute terms, primarily characterized as wives twice as often as men were primarily characterized as husbands and, in relative terms, women were seven times more likely to be primarily identified as someone's spouse than were men. Aside from the highly unrealistic position of queen, the image of women presented in fiction as studied in secondary schools today is, unlike that of men, a clear and consistent one. Wives, lovers, mistresses, and whores all share certain common relations with men. It is also true that the only real occupation (such as the UIC might recognize) assigned to women was that of nurse. Further comment on that seems unnecessary.

Table 28

NUMBER OF OCCUPATIONS ATTRIBUTED TO FEMALES AND MALES IN STUDIES OF TEXTS AND PICTURE BOOKS BY OTHERS

| Author | Pub. Date | Sample | Number of Occupations | | Number Shown Working (Outside Home) | |
|---|---|---|---|---|---|---|
| | | | F | M | F | M |
| Frasher and Walker | May 1972 | 1st and 2nd grades reading textbooks in Georgia | 11 | 58 | in 52 stories | in 196 stories |
| Wright (North York study) | May 1975 | Most used Grades 1,2,3 readers in North York | 14 | 139 | 14 | 146 |
| Stefflre | 1969 | "Primers and Basic Texts" for 1st-6th grades, from: Economy; Ginn; Harper & Row; Houghton Mifflin; Scott Foresman; John C. Winston. From 9 to 13 books from each publisher. | | | 19% of women | 87% of men |
| Women on Words and Images | 1972 | 134 Elementary school readers currently in use in 3 suburban New Jersey towns (14 publishers) | 2 to 11 | 13 to 35 | (ranges per series) | |
| | | | 26 | 147 | (actual number) | |
| Graebner | Oct. 1972 | 283 stories in 1962-63 Scott Foresman and Ginn 1961 editions. Elementary. | 5 | 38 | (old editions) | |
| | | | 26 | 73 | (new editions) | |
| Pyke | 1973 | For ages 3-6 picture books 1) publishers 1971 catalogues of children's books up to 27 randomly selected from each list 2) most popular books in children's libraries in 4 metropolitan areas. | 27 | 45 | 343 | 1102 |
| Stewig and Higgs | Jan. 1973 | 154 picture books selected by a clerk out of 957 picture books in a university education dept. library | 15 | | 17% | |

Table 29

NUMBER OF POSITIONS OCCUPIED BY FEMALE AND MALE ADULTS IN A SAMPLE OF PAGES OF A SAMPLE OF ONTARIO TEXTS BY GRADE LEVEL

| | Combined | | Primary | | Junior | | Inter-mediate | | Senior | | Honours | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | M | F | M | F | M | F | M | F | M | F | M |
| Positions Grouped According to Similarity of Activity | | | | | | | | | | | | |
| Government and political (mayor, prime minister, finance minister) | 2 | 499 | | 1 | | 12 | 1 | 290 | 7 | 263 | 1 | 279 |
| Nobility and royalty (king, queen, princess, viscount, knight) | 47 | 193 | 2 | 3 | 9 | 8 | 22 | 42 | 13 | 104 | 7 | 49 |
| Religious (minister, priest, nun, missionary) | 6 | 165 | | 2 | | 12 | 5 | 35 | 2 | 46 | 7 | 35 |
| Artistic and entertainment (poet, painter, cartoonist, composer) | 9 | 157 | | | | 3 | 10 | 113 | 10 | 167 | 1 | 68 |
| Military (general, PFC) | | 132 | | 1 | | 6 | | 59 | | 64 | | 56 |
| Academic (not pure science--historian, sociologist) | 2 | 111 | | | | | | 23 | 2 | 58 | 2 | 62 |
| Literary and journalistic (author, correspondent, publisher) | 10 | 102 | | | 1 | 8 | 11 | 82 | 2 | 84 | 1 | 39 |
| Business and commercial (landlord, boutique manager, clerk) | 14 | 92 | 1 | | 2 | 7 | 8 | 31 | 4 | 51 | 1 | 34 |
| Exploratory and pioneering (astronaut, early settler, traders) | | 67 | | | | | | 44 | | 22 | | 4 |
| Service and manual labour (cook, herder, bulldozer operator) | 35 | 34 | | 8 | 5 | 6 | 10 | 21 | 10 | 30 | 4 | 5 |
| Scientific (pure science--geologist, physicist) | | 62 | | | | 1 | | 7 | | 29 | | 5 |
| Police and judiciary (cop, chief justice) | | 40 | | | | 2 | | 18 | | 41 | | 8 |
| Teaching (principal, school teacher) | 7 | 25 | 1 | | | | 7 | | 12 | 5 | 1 | 2 |
| Athletic (skater, basketball player, swimmer) | 5 | 24 | | | 2 | 8 | 3 | 15 | | 14 | | 4 |
| Medical (doctor, psychologist, neurosurgeon) | 6 | 21 | | 1 | 1 | 2 | 1 | 8 | 3 | 12 | 3 | |

Table 29 (cont'd)

| | Combined | | Primary | | Junior | | Inter-mediate | | Senior | | Honours | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | M | F | M | F | M | F | M | F | M | F | M |
| Family-related Positions | | | | | | | | | | | | |
| Mother/father | 87 | 81 | 12 | 13 | 26 | 29 | 25 | 25 | 26 | 27 | 3 | 4 |
| Wife/husband | 57 | 30 | 7 | 5 | 15 | 8 | 21 | 13 | 30 | 13 | 9 | 3 |
| Daughter/son | 6 | 29 | | | | | 3 | 15 | 3 | 16 | | 6 |
| Sister/brother | 5 | 8 | | | 4 | | 9 | 4 | | 4 | | 2 |
| Grandmother/grandfather | 7 | 7 | | | 2 | 3 | 3 | 3 | 2 | 3 | | |
| Cousin | | 5 | | | | | | 5 | | | | 2 |
| Aunt/uncle | 4 | 14 | | 2 | | | | 2 | 2 | 5 | | |
| Positions that Appear More than Once | | | | | | | | | | | | |
| Farmer | 2 | 23 | | | | 8 | | 7 | | | | 5 |
| Chief | | 22 | | | | 4 | | 17 | | | | 4 |
| Friend | 3 | 15 | | | | | 2 | 4 | | 14 | | 6 |
| Country | 16 | | | | | | | | 16 | | | |
| God/goddess | 4 | 12 | | | | | | | 7 | 11 | | |
| Official | | 12 | | | | | | 4 | | 4 | | 9 |
| Customer | 4 | 7 | | | | | | | 5 | 9 | | |
| Radical | | 10 | | | | | | | | | | 19 |
| Student | 2 | 10 | | | | | | 3 | 2 | 6 | | 2 |
| Founder | 2 | 7 | | | | | | | | | 4 | 10 |
| Inventor | | 7 | | 2 | | | | 2 | | | | |
| Pilot | | 7 | | | | 7 | | | | | | |
| Architect | | 5 | | | | 2 | | 4 | | | | |
| Engineer | | 5 | | | | | | | | | | 4 |
| Hero | | 4 | | | | | | 2 | | | | 2 |
| Kibbutznik | 2 | 2 | | | 2 | 2 | 2 | 2 | | | | |

Table 29 (cont'd)

| | Combined | | Primary | | Junior | | Inter-mediate | | Senior | | Honours | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | M | F | M | F | M | F | M | F | M | F | M |
| **Positions that Appear More than Once (cont'd)** | | | | | | | | | | | | |
| Housewife | 4 | | | | | | 3 | | | | | |
| Outlaw | | 4 | | 3 | | | | | | | | |
| Peasant | | 4 | | | | 3 | | | | | | |
| Rancher | | 4 | | | | | | 2 | | | | 2 |
| Rebel | | 4 | | | | | | 4 | | | | |
| Secretary | | 4 | | | | | | | | 3 | | |
| Apprentice | | 3 | | | | | | | | 3 | | 3 |
| Commissioner | | 3 | | | | | | | | | | 2 |
| Contestant | | 3 | | | | | | 6 | | | | |
| Hunter | | 3 | | | | | | | | | | |
| Mistress | 3 | | | | | | | | 3 | | | |
| Prisoner | | 3 | | | | | | | | | | 2 |
| Sailor | | 3 | | | | | | 3 | | | | |
| Spokesman | | 3 | | | | | | 2 | | 3 | | |
| Terrorist | | 3 | | | | | | 3 | | 9 | | |
| Thief | | 3 | | | | | | | | | | 2 |
| Traveller | | 3 | | | | | | 2 | | | | 2 |
| Allah | | 2 | | | | | | | | 2 | | |
| Bride/groom | 2 | | | | | | 2 | | | | | |
| Bodyguard | | 2 | | | | | | | | 2 | | |
| Champion | | 2 | | | | | | | | 2 | | |
| Citizen | | 2 | | | | | | | | | | |
| Criminal | | 2 | | | | | | | | 2 | | |
| Deserter | | 2 | | | | | | | | | | |

Table 29 (cont'd)

| | Combined | | Primary | | Junior | | Inter-mediate | | Senior | | Honours | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | M | F | M | F | M | F | M | F | M | F | M |
| Positions that Appear More than Once (cont'd) | | | | | | | | | | | | |
| Interpreter | | 2 | | | | | | 2 | | | | |
| Jetsetter | 2 | | | | | | | | 2 | | | |
| Mystic | 2 | | | | | | | | | | 2 | |

Table 30

PERCENTAGE OF FEMALE AND MALE CHARACTERS IN DIFFERENT SOCIAL POSITIONS FROM BOOKS USED IN ENGLISH LITERATURE COURSES IN GRADES 10, 11, AND 12 IN A SAMPLE OF SCHOOLS IN ONTARIO

| Female Character | % | Male Character | % |
|---|---|---|---|
| wife | 20 | soldier | 17 |
| servant | 8 | school-boy | 9 |
| queen | 7 | husband | 3 |
| lover | 7 | lover | 3 |
| mistress | 5 | adventurer | 3 |
| mother | 4 | professor | 2 |
| nurse | 2 | uncle | 2 |
| school-girl | 2 | earl | 1 |
| whore | * | doctor | 1 |
| countess | | farm-hand | 1 |
| | | servant | 1 |
| | | king | 1 |
| | | prince | 1 |
| | | clerk | 1 |
| | | lawyer | * |
| | | duke | |
| | | merchant | |
| | | fisherman | |
| | | father | |
| | | salesman | |
| | | teacher | |
| | | policeman | |
| | | student | |
| | | convict | |
| | | weaver | |
| | | money-lender | |
| | | farmer | |
| | | skinner | |
| | | groom | |
| | | biologist | |
| | | probation officer | |
| | | supervisor | |
| | | athlete | |
| | | governor | |
| | | slave | |
| | | monk | |
| | | marquis | |
| | | tramp | |
| | | editor | |
| | | organist | |
| | | knight | |
| | | priest | |
| | | landlord | |
| | | mayor | |
| | | sailor | |
| | | secretary | |

Table 30 (cont'd)

| Female Character | % | Male Character | % |
|---|---|---|---|
| | | racketeer | |
| | | taxi driver | |
| | | ghost | |

* The remaining categories represented less than 1% of characters.

## 3. THEMES

One elementary methodological point should be made here, with the aid of one or two examples. If the basic frequencies of male and female characters differ, then studies that do not report the ratio cannot speak of relative differences in the frequency of portrayal of boys and girls in positions, settings, etc. It is misleading to say that boys are portrayed as doing X twice as often as girls if this results from the fact that boys generally appear more in children's stories than do girls. Although this point should be obvious, different frequencies of appearance of the two sexes are seldom taken into account in any systematic way when investigators interpret their data.

An example of a survey that attempted to obtain objective statistical data as well as illustrative examples was the analysis by Women on Words and Images in their study entitled Dick and Jane as Victims: Sex Stereotyping in Children's Readers. While their analysis was by no means as detailed as that of the present study, they sampled a large number of books (134 elementary school readers from fifteen publishers--including 2,720 stories). Thus they had a large sample to justify the generalizability of their findings regarding the most objective measures. The following findings are therefore in agreement with most previous research. Boy-centred stories are more common than girl-centred stories by a ratio of 5:2. For adult characters this ratio is 3:1. In the realm of biographies, men are featured six times more frequently than women. Similar ratios were observed for animal, folk, and fantasy stories.

The thematic content analysis performed by Women on Words and Images is problematic on two counts. First, the use of broad judgmental categories allows for a certain degree of biasing of results. Secondly, while the authors of Dick and Jane as Victims are aware that the frequency of the appearance of the themes for one sex or the other must be qualified by the differential frequency of boy and girl characters in the stories, they do not specifically compare relative frequencies. Thus in Table 8 of Dick and Jane as Victims the reader is cautioned to "keep in mind the initial ratios (5:2) of boy-centred to girl-centred stories" when considering the different frequencies of mastery and second sex themes. They do not, however, in their discussions in the text, follow their own advice. For example, the authors state that girls are "conspicuously absent" in tales involving "ingenuity and cleverness" since "clever girls appear 33 times" and "clever boys appear 131." The authors also state that girls are less "creatively helpful" than boys since boys are portrayed this way 54 times and girls only 19 times. These findings become less dramatic when one estimates that, given a 5:2 ratio to begin with, one would expect boys to be more frequently portrayed in any case. In fact, given the base rates of the themes one would expect, by chance alone, boys would have been portrayed as ingenious and clever about 117 times to the girls 47 times and that boys would have been portrayed as "creatively helpful" 52 times and girls 21 times. The actual frequencies in this latter case do not, in fact, deviate from these chance frequencies to a statistically significant degree.

Although the authors state that all themes listed in their Table 8 are "statistically significant," reanalysis of the data failed to reveal statistical significance on the themes of creative helpfulness, acquisition of skills, and altruism. Moreover, by failing to consider relative frequencies, the authors tend very much to exaggerate the girl-boy differences in cases where boys are overrepresented and, on the other hand, to underestimate the relative magnitude of the girl-boy differences in cases where girls are overrepresented. For example, girls were portrayed relatively more frequently than were boys under routine helpfulness. In this latter case the authors gloss over this important and large relative difference because of the fact that the absolute frequencies are very close (53 boys and 63 girls). Thus, the error works both ways, overestimating some differences and underestimating others.

The differences in the basic frequency of boys and girls may cause one to underestimate the very dramatic sex differences in what the authors refer to as "second sex themes." Girls are portrayed significantly far more frequently than boys as being more passive (400 percent more than would be expected, given the base frequency of girls), being restricted in their goals and trained for domesticity, incompetent, prone to mishaps, victimized and humiliated (in the case of the last two, 300 percent more often than expected, given the base frequency of girls). The only theme in this category in which girls were not portrayed significantly more often than boys was the theme of altruism--perhaps the only positively valued theme in the category. Similarly, Weitzman, Eifler, Hokada, and Ross (1971-2) give the ratios of male to female adults involved in rescue activities as 4:1 as evidence for activity restriction on women. However, this evidence is meaningless since they do not give the overall ratio of men to women in the sample (or even how large this sample is). Figures given earlier in that paper suggest ranges from 3:1 to 11:1 for males to females.

The reanalysis of the data from Dick and Jane as Victims did reveal clear, though not always large, differences in which boys were relatively more likely to be portrayed as: ingenious or clever; industrious, competent problem solvers; strong, brave or heroic; involved in apprenticeship, acquiring skills, and coming of age; earning, exploring and acquiring unearned rewards. Girls were significantly more likely to be portrayed as: passive or pseudo-dependent;

constricted in their goals and rehearsing for domesticity; incompetent and prone to mishaps; victimized and humiliated.

Hunter (1972) studied a population of children's picture books in an Ontario school library. She limited herself to those with realistic contemporary settings, with children as main characters. She used the same themes that were investigated in Dick and Jane as Victims. The set of books was a complete set, so tests of significance were not necessary. Weighting, however, was and the author did not do it, except indirectly. A recalculation of the data shows that boys were shown in books with themes of (1) ingenuity, cleverness, (2) industry, problem solving ability, (3) strength, bravery, and heroism, and (4) earning and acquisition more than girls. Girls were shown in books with themes of (1) routine helpfulness, (2) passivity, pseudo-dependence, (3) goal constriction, rehearsal for domesticity, and (4) incompetency and mishap.

## 4. CHARACTERISTICS AND BEHAVIOURS ATTRIBUTED TO FEMALE AND MALE FICTIONAL AND NON-FICTIONAL BEINGS

Having established that males are much more visible than females in all kinds of educational media, and that males are pictured in more varied positions in media society than are females, it remains to be seen if the actions and characteristics attributed to those persons are stereotyped by sex. The review of the literature of this section is much more complex than for the visibility section. In visibility counts, there were problems of definition of "main," "central," "important," "significant," "identifiable," and "major" characters, but the definitions seemed irrelevant when the figures were examined. As the evidence for the underrepresentation of women mounted, its consistency suggested that definitions of the coding categories were not of great importance.

When comparing activities and attributes of characters, however, the definition problem becomes insurmountable. In general, authors concluded that there was definitely stereotyping of males and females, but they all used different sets of actions and characteristics. There was overlap, of course, as many authors coded for aggressiveness, passivity, dominance, and deferral. Usually, the list of characteristics coded were from ten to twenty items and inter-coder reliability was high.

Because the coding categories are so diverse, it is not possible to present a table-style summary of the findings of others. Some illustrative examples will have to suffice as an introduction to the findings of this study.

Dunnigan (1975), in the study of Quebec textbooks, looked at nineteen specific activities and attributes which accounted for over 50 percent of all activities coded. The bulk of men's activities were in the category of income-producing work (49.8 percent of male adults' coded activities). Women

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were highest in this category too, but they only had about 17 percent of their activities as paid work. Another 10 percent of women's activities were nurturance activities. Boys and men were much more active in sport than girls; women were barely active in sports. The only activities that girls did more than boys were creative activities. Women were shown as parents more often than men. Otherwise, the activities coded did not reveal strong stereotyping. The table from which these conclusions were drawn was presented in such a way that weighting for number of people in each category was accomplished.

Wright et al. (1974) considered ten activities and sixteen attributes or concerns in the readers for Grades 1, 2, and 3 in North York. Of these, male adults clearly were involved in more learning activities, were more resourceful, more helpful, were leaders, felt superior, and were shown as physically competent more often than women. Women were shown as followers, dependent, and inferior more often than men. Girls were shown as quiet, followers, standing, dependent, and inferior more often than boys. Boys were shown as more resourceful, feeling superior, more courageous, and physically competent than girls.

Pyke (1973) looked at sixteen activities in picture books, but did not weight the percentages of occurrences of those activities by the number of persons doing the activity. Not enough frequencies were given to allow a recalculation. Pyke's conclusions, however, were consistent with Fischer and Carter's, where weighting and tests of significance were applied to a range of about 300 activities.

> It is surprising to note that the traditionally female activities of cooking and child care, although usually depicted as female activities, are not as strongly weighted in favour of females as one might expect. Of the total number of such activities, they were performed by male figures over 30% of the time. On the other hand, sewing and cleaning are represented as almost solely female activities. Car driving, fighting, maintenance (household repairs, gardening), reading and water sports (fishing, swimming and boating) are predominately depicted as male activities. In each case of all examples of these activities, they are being performed by males 80% or more of the time. Crying, feeling helpless or afraid is not uniquely female--in fact, more males are found expressing such emotions than are females. (Pyke 1973, p. 6)

The list of activities and attributes coded in this study is to be found in Appendix A. There are 176 such activities and attributes, and understandably inter-coder reliability (69 percent agreement) on this aspect of the coding was not as high as on other parts of the coding (85 to 90 percent agreement). As all material could not be double coded and incorporated into the analysis, all material was checked by a coding supervisor. This included reading the coded material and checking the coding categories for obvious omissions. All English and most French texts were checked in this way. All second language texts were completely checked.

The findings from this study are to be found in Table 31 and Table 32. Only those activities and attributes which showed strong stereotyping are included in Table 31. Activities and attributes which would be expected to show strong stereotyping, but did not, are shown in Table 32. It is possible to see from these tables that with unweighted scores it appears that most activities and attributes listed are done more by males. When they are weighted, however, one finds that females do more of most activities (per human character) in which statistical significance was found. This apparent contradiction causes some problem of interpretation. Certainly weighting makes sense from a rigorous scientific point of view.

Raw scores, on the other hand, represent more of what the child will see. If, for instance, in the case of giving orders, a child sees many more male characters doing it than females, that is going to be the reality of the situation for that child. The fine points of the weighting argument are not going to be enough to show that the degree to which female characters give orders is about equal to the degree to which male characters give them.

Male characters outnumber the female characters in the raw scores as well as the weighted scores on three important attributes--dominating, succeeding, and being competent. The very small number of absolute scores for women make them practically invisible on these attributes. Males are not practically invisible in any of the items on this table.

Table 31

SEX OF SUBJECT AND DIFFERENTIATED CHARACTERISTICS OR ACTIVITIES ATTRIBUTED TO THEM IN A SAMPLE OF PAGES FROM A SAMPLE OF 302 ONTARIO TEXTS

| Direction | Sex | All Humans | | Children | | Adults | |
|---|---|---|---|---|---|---|---|
| | | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted |
| Female Direction | | | | | | | |
| Ask | Female | 133 | 318.2 | 37* | 50.9 | 96 | 263.6 |
| | Male | 409 | 207.6 | 84 | 69.3 | 325 | 147.7 |
| Carry | Female | 26 | 60.1 | 8 | 11.0 | 18 | 46.3 |
| | Male | 72 | 35.3 | 19 | 15.7 | 53 | 22.6 |
| Come | Female | 53 | 113.7 | 12* | 15.0* | 41 | 98.5 |
| | Male | 118 | 53.7 | 17 | 12.8 | 101 | 40.2 |
| Cry | Female | 47* | 69.8 | 25* | 29.7* | 22* | 32.0 |
| | Male | 36 | 11.3 | 21 | 15.0 | 15 | 3.6 |
| Feel | Female | 72 | 142.6 | 22* | 27.5* | 50 | 107.3 |
| | Male | 125 | 52.6 | 28 | 21.0 | 97 | 34.3 |
| Go | Female | 152 | 326.0 | 41 | 53.8* | 111 | 304.8 |
| | Male | 340 | 154.7 | 67 | 52.8 | 373 | 169.4 |
| Like | Female | 52 | 120.0 | 14 | 18.4 | 38 | 101.1 |
| | Male | 140 | 68.6 | 27 | 21.3 | 113 | 49.8 |
| Respond | Female | 93 | 207.2 | 36* | 42.8 | 57 | 161.4 |
| | Male | 229 | 108.2 | 32 | 22.8 | 197 | 92.3 |
| Sad | Female | 22 | 47.2 | 10* | 12.5* | 12 | 38.9 |
| | Male | 47 | 21.4 | 14 | 10.5 | 33 | 14.1 |
| Scared | Female | 25 | 57.8 | 13* | 17.0* | 12 | 35.0* |
| | Male | 67 | 32.9 | 21 | 16.5 | 46 | 22.0* |
| Shout | Female | 38 | 78.4 | 14* | 17.5* | 24 | 57.7 |
| | Male | 74 | 32.4 | 18 | 13.5 | 56 | 22.3 |

Table 31 (cont'd)

| Direction | Sex | All Humans | | Children | | Adults | |
|---|---|---|---|---|---|---|---|
| | | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted |
| Female Direction (cont'd) | | | | | | | |
| Sit | Female | 41 | 77.8 | 14* | 17.5* | 27 | 55.6 |
| | Male | 66 | 26.6 | 20 | 15.0 | 46 | 15.7 |
| Speak | Female | 196 | 501.3 | 50 | 68.8 | 146 | 425.9 |
| | Male | 681 | 369.4 | 120 | 99.0 | 561 | 270.9 |
| Think | Female | 65 | 166.2 | 26* | 34.1* | 39 | 123.8* |
| | Male | 226 | 123.7 | 41 | 32.3 | 185 | 97.2 |
| Work | Female | 180 | 498.9 | 48 | 63.0* | 132 | 441.7* |
| | Male | 778 | 449.3 | 72 | 56.7 | 706 | 391.8 |
| Male Direction | | | | | | | |
| Competent | Female | 15 | 48.3 | 6* | 7.5* | 9 | 37.8 |
| | Male | 107 | 73.0 | 7 | 5.2 | 100 | 69.6 |
| Dominate | Female | 15 | 51.9 | 2* | 2.8* | 13 | 60.2 |
| | Male | 222 | 178.7 | 5 | 4.1 | 217 | 166.4 |
| Give | Female | 35 | 115.6 | 11* | 14.4* | 24 | 100.9 |
| | Male | 283 | 198.2 | 18 | 14.2 | 265 | 184.4 |
| Write | Female | 79 | 247.6 | 17* | 22.3* | 62 | 239.4 |
| | Male | 525 | 349.1 | 27 | 21.3 | 498 | 318.2 |

Table 32

SEX OF SUBJECT AND EXPECTED BUT DIFFERENTIATED CHARACTERISTICS OR ACTIVITIES ATTRIBUTED TO THEM IN A SAMPLE OF PAGES FROM A SAMPLE OF ONTARIO TEXTS

| Expected | Sex | All Humans | | Children | | Adults | |
|---|---|---|---|---|---|---|---|
| | | Unweighted | Weighted | Unweighted | Weighted | Unweighted | Weighted |
| Female | | | | | | | |
| Smile | Female | 35* | 60.6* | 15* | 18.8* | 20* | 34.3 |
| | Male | 44 | 16.2 | 22 | 16.6 | 22 | 6.2 |
| Male | | | | | | | |
| Angry | Female | 13 | 35.4* | 5* | 6.3* | 8 | 28.1* |
| | Male | 55 | 31.8 | 6 | 4.5 | 49 | 28.5 |
| Know | Female | 62 | 158.6* | 34* | 44.6* | 28 | 96.1 |
| | Male | 227 | 123.1 | 62 | 48.8 | 165 | 93.8 |
| Make | Female | 89 | 242.3* | 25* | 31.3 | 64 | 214.2* |
| | Male | 368 | 212.5 | 26 | 14.5 | 342 | 189.4 |
| Order | Female | 62 | 173.9 | 17 | 22.3* | 45 | 154.4 |
| | Male | 298 | 177.3* | 31 | 24.4 | 267 | 151.7 |
| Push-pull | Female | 3* | 7.4* | 2 | | 1 | 4.1* |
| | Male | 10 | 5.3 | 0 | | 10 | 6.8 |

# 3. Relationship between Stereotyping and Children's Attitudes and Behaviour

This chapter discusses the effect of teachers' actions on children's sex role stereotypes and the effect of educational media on children's stereotypes.

Teachers' actions or non-actions can have a definite effect on children's intellectual functioning according to the researchers who have examined the patterns of interaction. In Section 2A the review of patterns of interaction leads to the conclusion that some children in the school system have different experiences with some teachers, depending on the sex of the student. The extent of differences in practice or degree of consistency in those differences is not yet well enough researched to draw firm conclusions.

Those who fear that a feminized school environment is detrimental to boys are balanced by those who feel that that same antagonism leads to intellectual independence for boys. The latter group of critics see the reinforcement of passivity being more detrimental to girls who eventually lose the desire to achieve or the ability to take risks. Positive rewards for being good become too valuable.

One apparent contradiction stems from the finding that children who are not very strongly stereotyped achieve more than stereotyped children (Frazier and Sadker 1973). This is at variance with earlier findings which suggest that strongly stereotyped children do better (Moglia and Abraham 1973). This data will all have to be examined more closely to see where the contradictions are and where the overlaps are. Ricks and Pyke (1973) showed that a sample of Ontario teachers of both sexes all believe that students tend to prefer male teachers, but Forsland and Hull (1974) showed that sex of teacher did not have a significant effect on children's achievement when IQ was held constant. More boys achieved higher scores on science than girls, and girls achieved higher schores on language arts than boys in Grade 6.

In 1970 Kimmel asked the question, "Can children's books change children's values?" He concluded that although there was evidence that children were influenced by what they read, especially if the reading was voluntary and not assigned, there was no long-term reduction of prejudice through short-term experimental media input. Kimmel's conclusions stand today and can be applied to the question of sex role stereotypes.

In 1964 Maccoby reviewed the literature concerning the effects of mass media on children's action and values and concluded that it did indeed have an effect:

> It appears clear from the foregoing summary of research findings that children's values, beliefs, and actions can be shaped to some degree through exposure to mass media. While we have long been aware that mass media in the form of visual aids are valuable instructional tools in the classroom (and recent work on school uses of instructional television strongly supports their effectiveness), it has not been clear whether the very large

> amounts of time children spent being entertained by the mass media had any consequences other than the pleasure they gave. We now know that they do. The nature of the effects depends upon many limiting conditions: on the nature of the individual child's intelligence and needs, and the quality of his personal adjustment; on the amount of information a child has, and the strength of his existing beliefs and values, before exposure to relevant mass media contents; and on the opportunities which occur in real life for the child to put into practice what he has learned from the mass media. But the impact of the media is real. What the child absorbs while he is being "entertained" he uses in the interpretation of his real-life experiences, and in preparing himself for roles that he will play in the future, as well as for immediate action. And the media may influence moods (for example, produce a mood of pessimism) or transmit pervasive beliefs (for example, that the world is a threatening place), as well as present bits of information or bits of action for imitation.

Maccoby's review can, like Kimmel's, be applied to the question of sex role stereotypes. Children do have sex role stereotypes that they bring with them when they enter school. Evidence suggests that some of these stereotypes remain the same throughout elementary school (perception of adult roles) or increase in intensity (reading preferences, mathematics leanings). The content analyses reported in the previous chapter suggest that reinforcement of these stereotypes is consistent through educational media. The evidence is that reinforcement from educators is less systematically accumulated and at present is not strongly conclusive (see Chapter 2A).

The intent of this chapter is to describe the extent to which school personnel and media affect sex role stereotyping. Socialization theories and supporting evidence cited in Chapter 1 suggest that the school years are a time when previously established stereotypical notions can be changed. Children begin to have the complexity of cognitive reasoning to absorb and process non-stereotyped ideas at about the time they enter school or shortly thereafter.

Some evidence suggests that they are less stereotyped in the early grades than later (Fennema 1974; Hartley 1959; Tibbets 1974), and other evidence suggests that stereotyping is moderate when applied to others, but strong when applied to self (Schlossberg and Goodman 1972).

Fennema (1974) explored the biological and cultural evidence to explain the group differences in performance between boys and girls. There is a tendency for more boys to be better at abstract mathematical reasoning and problem solving than girls after Grade 4. There is a tendency for more girls than boys to be good at routine calculation type tasks after Grade 4 also. Biological explanations were judged as inadequate by Fennema who favoured the explanation that cultural values, which expect men to take risks but do not expect the same of women, were the main reason for the group difference. The timing of the development of the difference is related to the growing awareness of the need to move into adult positions.

Tibbets (1974) demonstrated similar timing with regard to diverging group measure differences in reading interests of girls and boys. At age nine or ten more boys show a preference for stories about boys than girls do. Girls do not show a definite pattern of preference, except that they are not interested in sports or war. Wiberg and Trost (1970) found the same to be true in Grade 1.

Schlossberg and Goodman (1972), on the other hand, showed stable sex role expectations of children about the appropriateness of certain jobs for one sex or another at ages five, eight, and eleven. Children were less likely to see that women could take men's jobs than vice versa. Rigid boundaries were more likely for non-professional jobs. When asked about their own plans, however, the children were most likely to choose a sex-appropriate occupation. Their expectations for themselves were more constrained than their expectations for others.

Hartley (1959) found some years earlier, that girls of working mothers were more likely to choose a non-stereotyped occupation than girls of non-working mothers. This may be explained, however, by the group statistics--the larger the number of mentions, the greater the possibility of variety.

Maccoby (1964) and Kimmel (1970) both did literature reviews of the effects of media on children's values and concluded that it definitely does have an effect, but that there are limitations. Maccoby felt that the media influence could be counteracted by other influences. Assigned reading does not have the effect of voluntary reading (Kimmel 1970), so texts can be assumed to be somewhat diminished in effect, although the presence of counteractive influences to the heavy message in educational media are not widespread at present.

Appendix A:

## List of Activities and Attributes Used in Coding Media

affiliate
aggressive
alert
angry
approve
argue
ashamed
ask
attack
bad
believe
blame
born
brave
build
buy
capture
carry
chase
clean
clever
climb
come
compete
competent
competitive
complain
confident
confused
cook
crawl
cry
dance
debate
decide
dedicate
description
destruct
die
disappointed
discipline
discover
disturb
dizzy
dominant
dominate
dress-up
drink
eat
entertain
escape
excited
explore
faint
fall
feed
feel
find
fish
fix
flee
fly
follow
friendly
frown
game
generous
giggle
give
give care
go
good
grab
grateful
greet
grow
guilty
happy
harm
hear
help
hide
hit
hug
hunger
hunt
intelligent
jump
kill
kind
know
laugh
lazy
learn
lie
like
live
lively
look
lose

love
make
march
mean
meet
mischievous
move
neat
obey
offend
order
own
paint
panic
physical
place
play
play instrument
plead
praise
pretend
proud
push-pull
reach
read
respond
return
reward
ride
roll
run
sad
scared
scream
search
seek
sell
shout
show
sick
sing
sit
skate
skip
sleep
smell
smile
speak
spend
stand
steal
stubborn
succeed
surprise
swim
swing
sympathize
take
teach
thank
think
thirst
tidy
timid
tired
train
wait
walk
warn
wash
wave
wear
win
work
wrestle
write

Appendix B:
# List of Kits Sampled

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1. Mathlab. J.W. Opper. et al. Scholar's Choice, 1971.
   315 cards (8" x 5"), teacher's manual.

2. Operation Railroad: The Reasons for Building the Canadian Pacific Railroad. Phyllis Arnold. Canadian Social Science Services, 1970.
   2 audiotape reels, 1 student booklet (30 copies), 1 teacher's booklet, 1 teacher's manual.

3. Exploring Canada Through Maps. I.C.S. McLellan. Canadian Visuals, 1971.
   20 filmslides, cards, teacher's manual.

4. Struggle for the Fourteenth Colony. Wilfried Neidhardt. Clarke, Irwin, 1971.
   Reproductions of original source documents.

5. Mathex Models. Encyclopaedia Britannica, 1967.
   Box of mathematical geometric shapes.

6. The Capture of York, 1813. J. Compton-Smith. McGraw-Hill Ryerson, 1968.
   24 documents and records.

7. Canada and the Great War. Charles Humphries. Clarke,

Irwin, 1971.

Reproductions of historical documents.

8. The Money Go Round and Other Money Matters. Canadian Life Insurance Association, 1972.
   1 filmstrip, 1 audiodisc, 6 transparencies, 6 pamphlets, 1 booklet, discussion notes.

9. Stratford, Canada. James R. Aikens. Clarke, Irwin, 1972.
   Reproductions of original source documents.

10. Laurier. Hartwell Bowsfield. Clarke, Irwin, 1969.
    Reproduced historical documents and artifacts.

11. Push to the Pacific. M. W. Campbell. Clarke, Irwin, 1968.
    Reproduced historical documents.

12. Indoor Field Trip Series. D. Donaldson, et al. Learning Resources Corporation, 1971.
    20 colour filmslides, map, booklets.

13. The North West Mounted Police, Part 2: The March West. Phyllis Arnold, Maurine Moolen, and Ann Mazur. Canadian Social Science Services, 1970.
    2 audiotape reels, 1 student booklet (30 copies), 1 teacher's booklet, 1 teacher's manual.

14. Volcanic Rocks. J. R. Janes. Holt, Rinehart and Winston, 1973.
30 colour slides, teacher's guide, geological time chart.

15. Language Development Program. David and Joseph Gladstone. Science Research Associates, 1970.
96 storyboards and teacher's guide.

16. Ontario Human Rights Commission Information Kit. Ontario Ministry of Labour: Human Rights Commission.
Pamphlets.

## Appendix C:
# List of Television Videotapes Sampled

Almost Home

Bellamy on Botany

Calling Captain Consumer

Cover to Cover

Dusting Off Mythology

Ecology: You and Your Environment

Episodes and Issues in Canadian History

Explorations in Shaw

Guess What?

Inside/Out

Jongleries metriques

Jongleries mathematiques

Le jardin des sensations

Le monde des petits

Let's All Sing

Math Relationships

Reading Opportunities

Ripples

The Third World

True North

Vision On

The World of B.J. Vibes

World Religions

Appendix D:

## List of Books Sampled from *Circular 14*

Introducing English 2
M. Marquis et R. Saindon
No series
Holt
1969, 102 pp. Guide number: P23010 Eng.

Blackout
M. Alban, D. Dean, and C. Roth
Light and Life Reading Series
Ginn
1969, 117 pp. Guide number: P20010 Eng.

Carousel
J.R. McIntosh et al., eds.
Canadian Reading Development Series
Copp Clark
1965, 117 pp. Guide number: P20010 Eng.

Charley the Mouse Finds Christmas
Wayne Carley
Nelson Venture Books
Thomas Nelson
1972, 117 pp. Guide number: P20010 Eng.

Choices
E.A. Thorn, C. Braun, and M.I. Richmond
Gage Strategies for Language Arts II
Gage
1973, 117 pp. Guide number: P20010 Eng.

Close-Up
B. Bouchard, D. Dean, and C. Roth
Ginn Integrated Language Program
Ginn
1969, 117 pp. Guide number: P20010 Eng.

Colour Weeples
D.G. Gillespie
No series
McGraw-Hill Ryerson
1972, 117 pp. Guide number: P20010 Eng.

Deep Sea Smile
D. Lackenbauer, N. Hishon, and M. Adair
Ginn Integrated Language Program
Ginn
1970, 117 pp. Guide number: P20010 Eng.

Developing Comprehension in Reading 3A
Mary Thomas
No series
Dent
1972, 117 pp. Guide number: P20010 Eng.

Flights Near and Far
J.R. Linn et al.
Language Patterns
Holt
1970, 117 pp. Guide number: P20010 Eng.

For Me
E.A. Thorn et al.
Language Experience Reading Program
Gage
1970, 117 pp. Guide number: P20010 Eng.

Gilligan Milligan
S. Gibb and E. Talpiainen
SRA Individualized Reading Skills Program
SRA
1974, 117 pp. Guide number: P20010 Eng.

Ginn Interest Series
Ginn Staff
No series
Ginn
1971, 117 pp. Guide number: P20010 Eng.

Goodnight Painted Pony
John McInnes
Nelson Venture Books
Thomas Nelson
1972, 117 pp. Guide number: P20010 Eng.

Groups
E.A. Thorn, C. Braun, and M.I. Richmond
Gage Strategies for Language Arts II
Gage
1973, 117 pp. Guide number: P20010 Eng.

In the Sun
M. Alban, D. Dean, and C. Roth
Light and Life Reading Series
Ginn
1969, 117 pp. Guide number: P20010 Eng.

Just for Fun
C. Kambeitz, D. Burns, and J. Proctor
Light and Life Reading Series
Ginn
1967, 117 pp. Guide number: P20010 Eng.

Kittens and Bears
John McInnes et al., eds.
Nelson Language Development Reading Program
Thomas Nelson
1970, 117 pp.  Guide number: P20010 Eng.

The Magical Adventures of Pierre
M. A. Downie
Nelson Venture Books
Thomas Nelson
1974, 117 pp.  Guide number: P20010 Eng.

Magic Seasons
A. Allinson, B. Allinson, and J. McInnes
Nelson Language Stimulus Program
Thomas Nelson
1972, 117 pp.  Guide number: P20010 Eng.

Meet Mr. Mugs
C. Kambeitz, D. Burns, and J. Proctor
Light and Life Reading Series
Ginn
1966, 117 pp.  Guide number: P20010 Eng.

Mixed-Up Magic
W. Carley and J. McInnes
Nelson Venture Books
Thomas Nelson
1972, 117 pp.  Guide number: P20010 Eng.

Mugs Scores!
B. Bouchard, D. Dean, and C. Roth
Ginn Integrated Language Program
Ginn
1969, 117 pp.  Guide number: P20010 Eng.

My First Book
H. Covell, A. Grady, and P. Moore, eds.
The Ryerson Readers
McGraw-Hill Ryerson
1966, 117 pp.  Guide number: P20010 Eng.

Ooops Splash!
M. Alban, D. Dean, and C. Roth
Light and Life Reading Series
Ginn
1969, 117 pp.  Guide number: P20010 Eng.

Pals and Pets
C. Kambeitz, D. Burns, and J. Proctor
Light and Life Reading Series
Ginn
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G.C. Pimental, et al. eds.
No series
Houghton Mifflin
1973, 555 pp.  Guide number: H51040 Eng.

Energy and the Conservation Laws
D. Paul, D. Pierce, and K. Stief
Physics: A Human Endeavour
Holt
1974, 559 pp.  Guide number: H55020 Eng.

OVERVIEW (p. 11)

Bem, S.L. "Sex Role Adaptability: One Consequence of Psychological Androgyny." Journal of Personality and Social Psychology. 31 (1975): 634-643.

It was hypothesized that "psychologically androgynous" individuals whose personality is neither "masculine" nor "feminine" but can be either when the situation requires them to do so, are more adaptable to sex-stereotyped activity.

The data from the androgynous subjects supported the hypothesis in that they could adapt across situations engaging in whatever behaviour seems appropriate regardless of its sex stereotype. When under pressure to conform, androgynous subjects displayed masculine independence and when given the opportunity to interact with a kitten, they displayed feminine playfulness.

The author claimed that this study is evidence of the existence of a group of people called androgynous who have sex role adaptability which allows them to engage in effective behaviour regardless of the sex-typed labels masculine or feminine.

Crandall, V.J., and Rabson, A. "Children's Repetition Choices in an Intellectual Achievement Situation Following Success and Failure." Journal of Genetic Psychology. 97 (1960): 161-168.

See abstract in Part 3, Sociability section.

Deaux, K., and Emswiller, T. "Explanation of Successful Performance on Sex-linked Tasks: What Is Skill for the Male Is Luck for the Female." Journal of Personality and Social Psychology. 29 (1974): 80-85.

The subjects were 55 male and 75 female undergraduates who were asked to judge the ability and luck of a male or a female who was depicted as successful in a "masculine" or "feminine" task.

The male's success was attributed more to skill and the female's to luck on the "masculine" task. The attributions did not differ on the "feminine" task.

Etaugh, C., Collins, G., and Gerson, A. "Reinforcement of Sex-typed Behaviors of Two-year-old Children in a Nursery School Setting." Developmental Psychology. 11 (1975): 255-263.

Sex differences in play preferences and teacher enforcement behaviours toward female sex-typed activities were observed. The children involved were two-year-old nursery school children (10 boys and 6 girls) and 5 teachers (4 female and 1 male).

Girls were found to prefer painting, helping, reading, and listening to stories while boys were found to prefer the hammer and transportation toys. However, male subjects spent more time than female subjects in stereotypic opposite-sex behaviours (as defined by Fagot and Patterson, 1969). Hence toddlers of each sex preferred stereotypic feminine play activities. (This finding supports the "maternal identification" notion advocated by both psychoanalytic and social learning theorists that "children of both sexes initially identify with the mother.") Teachers reinforced boys and girls equally often, with feminine behaviours being reinforced more often than masculine behaviour, again, for both sexes. Teachers also were more likely to reinforce same sex-typed behaviours.

Fein, G., Johnson, D., Kosson, N., Stork, L., and Wasserman, L. "Sex Stereotypes and Preferences in the Toy Choices of 20-month-old Boys and Girls." Developmental Psychology. 11 (1975): 527-528.

Eleven boys and 13 girls, aged 20 months, first-borns, from white, lower-middle and middle-class families were observed in the homes with their mothers.

During free play children were given 3 "male" toys (hammer, truck, gun) and 3 "female" toys (bead bracelet, doll, iron) to play with and number of 10-second contacts with each sex-typed toy was recorded. Then, experimenter demonstrated the toys (e.g., picking up the gun, held it up and said "bang, bang") to subjects, and imitation was scored if subjects imitated the model's action. Next familiarity of toy was assessed according to mothers' answers (to a questionnaire) indicating which toys the subjects possessed and which were played with the most.

Both measures during free play and on imitation showed sex stereotyping in 20-month-old children. Girls played with girl toys more and boys played with boy toys more and similarly girls more often imitated girl toys while boys more often imitated boy toys. However, no difference between boys and girls in total amount of toy contact and imitation was found. Also, no correlation between toy ownership and imitation or free play scores was revealed. Though girls tended to own girl toys and boys owned boy toys, the boy toys were found to be owned by both boys and girls, but girl toys were exclusively girl owned.

The authors point out the limitations of having only female models in the experiment. Also important to understand is the fact that children's ownership of toys at the early age of 20 months is likely to be the parents' choice and reflects differences in child rearing behaviour.

Feldman-Summers, S., and Kiesler, S.B. "Those Who Are Number Two Try Harder: The Effect of Sex on Attributions of Causality." Journal of Personality and Social Psychology. 30 (1974): 846-855.

Two experiments were conducted to determine the role of sex stereotypes on the attribution of ability and motivation as well as task difficulty and luck of men and women in specific social roles.

Experiment 1: One hundred and fourteen college undergraduates, equally divided by sex, were given a booklet of problems allegedly solved by either men or women and varying in degree of successfulness in solving the problems. Subjects were asked to rate the problem solvers in terms of ability, motivation, luck, task difficulty, and unexpectedness of the outcome.

Success led, of course, to higher ratings in motivation, ability etc., however, subjects attributed more motivation to female problem solvers than to male problem solvers.

Experiment 2: One hundred and sixty undergraduates, equally divided by sex, were asked to read a biography of a successful physician (male for half the subjects and female for the other half) and make evaluations as well as their own (subject's) expectations of success as physicians and of men and women in general.

Subjects expected males and females to be equally successful when the physician was described as a pediatrician but expected men to be more successful when the physician was described as a surgeon. Women expected themselves to be less successful in either case. Subjects attributed greater motivation to the successful women physician than to the successful male physician. Male subjects perceived the female physician as being less able and having an easier task than the male physician, while female subjects saw the female physician as having a more difficult task.

The authors point out that when the task was "feminized," women were expected to be as successful but not more successful than men. They further suggest that this implies that success is "cognitively linked" to maleness, citing an unpublished study that found males entering traditional female occupations (e.g., elementary school teachers, nursing) were expected to be more successful than females.

Frueh, T., and McGhee, P.E. "Traditional Sex Role Development and Amount of Time Spent Watching Television." Developmental Psychology.
11 (1975): 109-121.

Since television programs portray male and female roles along traditional sex-typed lines (Sternglanz and Serbin 1974), it was hypothesized that time spent watching television would be related to strength of traditional sex role development.

Forty boys and 40 girls, white, middle class, 10 boys and girls from each of kindergarten, Grades 2, 4, and 6. Children were further divided into high (25 hrs. +) and low (-10 hrs.) television viewers on the basis of mother's (for Kindergarten and Grade 2) or children's (Grades 4 and 6) assessments. All children were administered Brown's (1956) It scale of sex role preference.

(1) High television viewers obtained higher It scale scores than low television viewers. (A high It score implies a stronger sex role identification.) (2) Boys received higher scores than girls. (3) Children in higher grades obtained higher scores than children in lower grades.

The latter two findings have been reported frequently. The first reported finding is a novel one and the fact that the effect was found at each age level studied suggests a strong pervasive influence of television on children's sex role preference as assessed by the It scale.

Kohlberg, Lawrence. "A Cognitive-Developmental Analysis of Children's Sex-Role Concepts and Attitudes." In *The Development of Sex Differences*, edited by Eleanor E. Maccoby. Stanford: Stanford University Press, 1966.

Maccoby, E.E., and Jacklin, C.N. *The Psychology of Sex Differences*. Stanford: Stanford University Press, 1974.

McGhee, P.E. "Television as a Source of Learning Sex Role Stereotypes." Paper presented at the Biennial Meeting of the Society for Research in Child Development. Denver, Colorado, April 1975.

A sample of 40 boys and 40 girls were selected in equal numbers of high and low incidence of TV watching from each of kindergarten, Grades 2, 4, and 6. Television watching was determined by questionnaire. All subjects were administered the It test (twice over one year) as well as another sex role test.

Older children were more strongly sex-typed than younger children. Boys were more strongly sex-typed than girls. High TV watchers were more strongly sex-typed than low TV watchers.

Montemayor, R. "Children's Performance in a Game and Their Attraction to It as a Function of Sex-typed Labels." *Child Development*. 45 (1974): 152-156.

Sixty boys and 60 girls, 6 to 8 years old, from a suburban community. The children played a game which was labeled either sex-appropriate, sex-neutral, or sex-inappropriate. Subjects' performance was recorded and their attraction to the game was determined both by ratings and a scale.

Both boys and girls were found to perform best when the game was labeled sex-appropriate and poorest when the game was labeled sex-inappropriate. The neutral-labeled condition did not differ from either the boy-labeled or girl-labeled condition. The attractiveness of the game was equally high in the sex-appropriate and the neutral label conditions, both of which were significantly more attractive than the sex-inappropriate condition.

Although the finding that sex labels had a tendency to influence the direction and magnitude of performance equally for both sexes is not in agreement with most other sex role preference studies, the author postulates that it is probable in a choice situation that boys prefer only the male role and girls prefer both male and female roles. However, under the present study, no choice was permitted, rather performance was requested. Subjects had to perform in clearly labeled sex-appropriate or sex-inappropriate activity. Hence subjects appeared to emit behaviours which are consistent with their own sex.

Mussen, Paul. "Theories of Sex Role Socialization." In *Handbook of Socialization Theory and Research*. Glenview, Illinois: Basic Books, 1969.

Nadelman, L. "Sex Identiy in American Children: Memory, Knowledge, and Preference Tests." *Developmental Psychology*. 10 (1974): 413-417.

Forty (5 x 3 inch card) pictures of masculine and feminine items were administered to 240 white, non-Jewish American boys and girls, 5 to 8 years old, from working-class and professional middle-class families to assess sex stereotyping in tests of recall, identification (knowledge), and preference.

Same-sex items were significantly recalled, identified and preferred over opposite-sex items. Girls appeared to be less sex rigid in their responses than boys were. According to the scores of the preference test (1) older children were more stereotyped than younger children, (2) sex differences were greater for older children of working class than older children of middle class.

Rheingold, H.L., and Cook, K.V. "The Contents of Boys' and Girls' Rooms as an Index of Parents' Behavior." *Child Development*. 46 (1975): 459-463.

The authors proposed that the contents of the rooms of children under six are determined largely by the parents and hence indicate parental ideas about sex appropriateness of toys.

Ninety-six children ranging in age from 1 to 71.6 months (with their own room) were studied. Most were first born and of upper-middle class parentage. The actual rooms were examined and the contents noted.

Boys' rooms contained more vehicles, animal furnishing, educational-art materials, spatio-temporal and sports equipment, and toy animals; but less dolls, floral furnishings, and ruffles than did girls'. There were no sex differences in the incidence of books, furniture, musical objects, and stuffed animals. The incidence of vehicles increased markedly from one to five years of age for boys, but hardly at all for girls; there were other differences in less frequently observed toys. Generally the boys had a much greater variety of toys.

Serbin, L.A., O'Leary, K.D., Kent, R.N., and Tonick, I.J. "A Comparison of Teacher Response to the Preacademic and Problem Behaviors of Boys and Girls." *Child Development.* 44 (1973): 796-804.

It was hypothesized that teachers respond differentially to behaviours emitted by boys and girls. Three- to 5-year-old boys and girls from predominantly white middle class and some working class families (one school out of four is working class), 15 white female teachers, all with college training were studied.

Two classes of behaviour, disruption and dependency, were examined. Observational codes were developed to record these behaviours.

Disruptive behaviours: (1) ignoring teacher directions, (2) destruction of materials, (3) physical or verbal aggression toward others.

Dependent behaviours: (1) crying, (2) proximity to the teacher (within arm length), (3) solicitation of teacher attention.

Teacher responses recorded: (1) praises, (2) loud reprimand (audible to entire class), (3) soft reprimand (audible to child and his neighbours), (4) yelling, (5) extended direction (detailed instructions or demonstration intended to teach a child to learn), (6) brief direction (telling child to do something), (7) long conversation (non-directional, more than one sentence), (8) short conversation (non-directional, one sentence or less), (9) touching child (without full body contact), (10) hugging, (11) helping, (12) removing child from the group, (13) restraint (forcing orientation of child's head or body).

Results: Boys were found to be significantly more aggressive and more ignoring than girls were. On the other hand, girls were reported to emit higher rates of proximity behaviour. However, there were no sex differences found in rate of solicitation and crying.

Teachers were found to give more brief direction, extended conversation, and extended direction to boys than to girls. Increased attention from teachers for girls was directly related to girls' rate of physical proximity to teacher. Loud reprimands were employed when scolding boys. Teachers were more likely to respond to aggression by boys than by girls.

The authors also reported significant differences in teacher response to children under normal classroom condition (absence of disruption and dependency). Teachers responded at a higher rate to boys' participation than to girls' participation.

Sternglanz, S.H., and Serbin, L.A. "Sex-role Stereotyping in Children's Television Programs." *Developmental Psychology*. 10 (1974): 710-715.

Subjects: Male and female models in the 10 most popular children's programs according to the Nielson ratings were studied.

Observers coded videotapes of shows on frequency of models of each sex, activity, achievement construction, dominance, aggression, deference, autonomy, harm avoidance, succorance, nurturance, magic, recognition, self-recognition.

Male roles were portrayed twice as often as female roles. Male roles were also significantly more aggressive, succorant (aid seeking), and constructive. Female roles were more deferent than male roles. Males were more often rewarded and females more often received no consequence for their actions.

A number of programs had to be dropped from the study because of a complete absence of female roles. Almost all "evil" characters were males.

Williams, J.E., Bennett, S.M., and Best, D.L. "Awareness and Expression of Sex Stereotypes in Young Children." *Developmental Psychology*. 11 (1975): 635-642.

This is a study of the child's ability to assign a stereotype to a male or a female. The subjects were 284 Euro-American children from kindergarten, Grade 2 and Grade 3. Children were presented with adjectives (the more difficult of which were explained to the younger children) and asked to indicate which of two persons (man or woman) in drawings were best described by the adjectives. These were 24 adjectives among which were gentle, aggressive, emotional, talkative, fussy, boastful, independent, loud.

By kindergarten, children already had a considerable knowledge of sex stereotypes. The male stereotypes appeared to be learned earlier than the female stereotypes. Male examiners elicited more accurate stereotyping than female examiners. No sex differences among the children were found in degree of sex stereotyping.

The fact that sex stereotyping has progressed so far by the time the child has entered school, and the fact that little change occurs between second and fourth grade, as the authors note, "provides no evidence of a 'Dick and Jane' effect." The child, it appears, has acquired a good deal of sex stereotyping before entering school.

Male stereotypes (especially aggressive, strong, adventurous, coarse, independent, and loud) are the first and strongest stereotypes learned. The authors suggest that these have more obvious behavioural references than do the female stereotypes. Thus the stereotypes that are learned earliest are those most easily confirmed or disconfirmed in the child's own experience. It is interesting that those earliest learned stereotypes refer to behaviours for which evidence is considered strongest for real overt sex differences.

OVERVIEW (p. 25)

Child, Irvin L., Potter, Elmer H., and Levine, Estelle M. "Children's Textbooks and Personality Development: An Exploration in the Social Psychology of Education." Psychological Monographs. 60 (1946): 1-54.

See p. 224 for abstract.

McDiarmid, Garnet, and Pratt, David. Teaching Prejudice: A Content Analysis of Social Studies Textbooks Authorized for Use in Ontario. Toronto: Ontario Institute for Studies in Education, 1971.

See p. 228 for abstract.

Women on Words and Images. Dick and Jane as Victims: Sex Stereotyping in Children's Readers. Princeton, N.J.: Women on Words and Images, 1972.

See p. 226 for abstract.

TEACHER AND ADMINISTRATOR ATTITUDES AND ACTIONS (p. 27)

Bernstein, Jean. "The Elementary School: Training Ground for Sex Role Stereotyping." Personnel and Guidance Journal. 51 (1972): 97-101.

The reinforcement of sex role stereotypes in elementary schools is discussed with particular reference to differentiated activities, reading materials, and role models. The author suggests ways in which the pupil personnel worker can detect and eradicate sex role biases both in terms of contact with teachers and administrators and in terms of guidance facilities.

Frazier, Nancy, and Sadker, Myra. Sexism in School and Society. New York: Harper and Row, 1973.

Included in this work is a general discussion of the incidence of sex role stereotyping in various social institutions. Particular emphasis is placed on all levels of the educational system. The discussion of sexism in the elementary schools includes dress regulations, assigned tasks, the effects on a "feminine" environment on school boys, and various mechanisms of reinforcing traditional "masculine" and "feminine" behaviour. The authors draw on several studies to support their arguments and suggest areas for and means to institute changes.

Harrison, Barbara Grizzuti. Unlearning the Lie: Sexism in School. New York: Liveright, 1973.

The author describes the institution, problems and effectiveness of the Sex Roles Committee that was created in the summer of 1970 by a group of women whose children attended an elementary school in Brooklyn. Documented are the suggested and actual changes within this particular school that were a result of the committee's concern for a non-sexist education for elementary school children.

Howe, Florence. "Sexual Stereotypes Start Early." Saturday Review. 16 October 1971.

The author reports the results of several studies to support the argument of a differential attitude toward and treatment of male and female children in school. Children are reported to learn sex stereotypes at a very early age and it is suggested that these stereotypes are fully ingrained by the fifth grade. Included are some brief recommendations for change.

Levy, Betty. "Do Teachers Sell Girls Short?" Today's Education. NEA Journal, December 1972, pp. 27-28.

This article isolates mechanisms of sex role reinforcement in schools and suggests means by which educators may correct the detrimental effects of sex role socialization in the school.

Levy, Betty, and Stacey, Judith. "Sexism in the Elementary School: A Backward and Forward Look." NEA Journal, October 1973.

The authors discuss ways in which schools maintain existing sex distinctions. Drawing on recent studies, sex stereotyping in elementary schools is demonstrated in texts, subject matter, teaching behaviour, and the school structure and organization. Included are several suggestions for areas and methods of change.

McLure, John, and McLure, Gail. "Cinderella Grows Up: Sex Stereotyping in the Schools." Educational Leadership. 30 (1972): 31-33.

This article contains a short discussion of sex stereotyping in school courses, texts, extracurricular activities and in the guidance process. Included are recommendations of possibilities of individual action to ameliorate these situations.

McClure, Gail, et al. "Sex Discrimination in Schools." Today's Education. 60 (1971): 33-35.

In response to the question, To what extent are schools responsible for the secondary status of women in society? the authors discuss sex differentiated educational activity and sex role images in textbooks as indications of the existence and continuance of a reflection of the secondary status of women.

Mulawka, E.J. "Sex Role Typing in the Elementary School Classroom as Reinforcement of Sex Role Stereotypes Learned at Home." Ph.D. Dissertation, Wayne State University, 1972. 103 pp.

This is a study concerning sources of sex typing influences in the elementary school classroom. Specifically, the author looks at the reinforcement of sex typed behaviour by the teacher, classroom behaviour differentiated on the basis of sex, and sex role representation in texts and classroom materials. The author concludes that sex role stereotyping is reinforced by the teacher's responses to male and female behavioural patterns, through the presentation of traditional occupational and leadership roles in written and pictorial classroom material, and through sex differentiated classroom activity.

Paley, Vivian. "Is the Doll Corner a Sexist Institution?" The School Review.
81 (August 1973): 569-576.

This article is a short discussion of the author's observations of male and female school children in a particular area of the kindergarten classroom--the doll corner. Differential attitudes toward and activities within this particular area of play are exhibited between boys and girls. The author offers some suggestions as to why this is so.

Ricks, Frances A., and Pyke, Sandra W. "Teacher Perceptions and Attitudes That Foster or Maintain Sex Role Differences." Interchange.
4 (1973): 26-33.

A survey of sixty secondary school teachers was conducted to determine teachers' perceptions of sex role differences. The findings revealed that teachers' perceptions and attitudes toward sex roles were highly traditional and reluctant toward change. Suggestions for the institution of a new role balance in the educational system are discussed.

Sadker, Myra, and Sadker, David. "Sex Discrimination in the Elementary School." National Elementary Principal, October 1972.

The influence of sex bias in the elementary school curriculum on male and female children is discussed. Particular emphasis is placed on the development of male and female role awareness through reading material, the role of the teacher, and school activities.

Sexton, Patricia Cayo. The Feminized Male: Classrooms, White Collars and the Decline of Manliness. New York: Vintage, 1970.

Sexton bemoans the straight jackets imposed on boys' and men's naturally active nature by the constraints of school and business. These constraints come, she maintains, from women trying to extend the order of their homes to semi-public places such as classrooms.

Shack, Sybil F. The Two-Thirds Minority: Women in Canadian Education. Toronto: Guidance Centre, Faculty of Education, University of Toronto, 1973.

Shack deals mainly with her personal experiences as a female teacher in the Canadian educational system. Included in this work is a short discussion of prevalent attitudes in the family and school which affect the self-image of female students and perpetuate traditional sex role stereotypes.

Stacey, Judith, Bereaud, Susan, and Daniels, Joan. And Jill Came Tumbling After: Sexism in American Education. New York: Dell, 1974.

An anthology of articles dealing with various aspects and areas of sexism in the educational system. Issues include the female achievement dilemma, the reflection of traditional sex role stereotypes in the media, counseling and vocational test biases, and a discussion of women's role in academe. Several articles deal specifically with the presentation of sex role stereotypes in children's story- and textbooks.

## CANADIAN STUDIES COVERING VARIOUS KINDS OF TEXTBOOKS (p. 45)

Cullen, Linda. A Study into Sex Stereotyping in Alberta Elementary School Textbooks. Edmonton: Alberta Human Rights Commission, Summer 1972. 28 pp.

A discursive presentation of a book-by-book analysis of twelve series which include arithmetic, health, social studies, science, and language arts texts for elementary grades. All books are found wanting on questions of adequate representation of females and the stereotyping of both sexes. Some books and series are given a "negative rating," but this is not explained and other options are not made explicit.

------. "Sex Stereotyping in School Textbooks." Business and Professional Woman, September 1973, pp. 3, 6.

This is a summary of the Summer 1972 report.

Dunnigan, Lise. Analyse des stereotypes masculine et feminins dans les manuels scolaires au Quebec. Quebec: Conseil du statut de la femme, Septembre 1975.

This analysis of 225 texts approved for use in Quebec used people and other beings as units of analysis. Nearly 25,000 fictitious characters whose sex could be identified and who were mentioned more than once were located. Their characteristics and actions were analyzed according to level of text, subject matter of text, and sex of author. In addition, occupations attributed to fictional people and biographies of real people were analyzed. Girls and women were found to be underrepresented and stereotyped as homemakers.

Fleming, Joyce. "Resolution: Text Books." Paper presented to Business and Professional Women's Club, North Toronto District, Fall 1971. Mimeographed.

This presentation cites statistics from the author's examination of selected readers, spellers, and math books from the elementary level. Underrepresentation of females is documented. No tests of significance. Some discussion of roles and positions.

Kaplan, Harriett E. "Sex Typing in Textbooks Used in the Saskatoon Public Schools." Canadian Newsletter of Research on Women. 2 (February 1973): 10-12.

A discursive examination of thirty textbooks being used in the Saskatoon Public Schools. No systematic recording was done, but the conclusions are those of other studies. The role of women is in general "inadequate." It is also summed up as "stereotyped subservient role to that of man."

### U.S. STUDIES COVERING VARIOUS KINDS OF TEXTBOOKS (p. 52)

Burstyn, Joan N., and Corrigan, Ruth R. "Images of Women in Textbooks: 1880-1920." Teachers College Record. 76 (February 1975).

An intensive look at geography, physiology (hygiene), and arithmetic textbooks published in the U.S. between 1880 and 1920 revealed the response of the textbook authors to changing norms and a deficient image of women. It is obvious from this analysis that a vast improvement has taken place since 1920. In one arithmetic text, of those problems with definite reference to humans, 1,142 were references to males, 598 to undetermined sex of humans, 14 to females and 13 to both sexes.

U'ren, Marjorie B. "The Image of Women in Textbooks." In Women in Sexist Society--Studies in Power and Powerlessness," edited by Vivian Gornick and Barbara K. Moran, pp. 218-225. New York: Basic Books, 1971.

While it is not completely clear, evidently this essay is based on a study of textbooks in California. The nature of the study is not made explicit although a few figures are given. Some generalizations are made well, although one would have to go to other studies for verification. Many examples are included.

Weitzman, Lenore J., and Rizzo, Diane. "Images of Males and Females in Elementary School Textbooks in Five Subject Areas." In Biased Textbooks. Washington, D.C.: Resource Center on Sex Roles in Education, National Foundation for the Improvement of Education, 1974.

A sample of texts used in average classrooms across the U.S. were examined for bias in age, race and sex distributions. One or two series were chosen from each of five subject areas by a panel of expert judges. The analysis centres around visibility in illustrations. As with other studies, the differences show females as underrepresented.

## CANADIAN STUDIES COVERING READERS AND LANGUAGE ARTS TEXTS (p. 55)

Batcher, Elaine, Brackstone, Demaris, Winter, Alison, and Wright, Vicki (Coordinator). ...And Then There Were None. Toronto: Federation of Women Teachers' Associations of Ontario, September 1975.

A well-done study of the seven series of readers for Grades 4, 5, and 6 approved by the Ontario Ministry of Education for provincial use. The study was intended to evaluate and recommend a list of positive-image, non-sexist teaching materials. None were recommended without reservation. One series was recommended with reservation, two were recommended for selected use and four were not recommended for use. The study did the usual male-female representation comparisons but also took a unique approach to the study of character presentation which concentrated on self-actualization and moral reasoning.

Cullen, Linda. A Study into Sex Stereotyping in Alberta Elementary School Textbooks. Edmonton: Alberta Human Rights Commission, Summer 1972. 28 pp.

See p. 221 for abstract.

Dunnigan, Lise. Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec. Quebec: Conseil du statut de la femme, Septembre 1975.

See p. 221 for abstract.

Kaplan, Harriett E. "Sex Typing in Textbooks Used in the Saskatoon Public Schools." Canadian Newsletter of Research on Women.
2 (February 1973): 10-12.

See p. 222 for abstract.

Ladan, C.J., and Miller, D. Hodgins. "Jane's Prerogative: Mediocrity." The English Quarterly.
8 (1975): 31-42.

This is a quantitative analysis of 90 percent of the preprimer through Grade 9 level reading texts authorized for use by the Alberta Department of Education. The analysis evaluates the proportion of females as main characters in stories and in illustrations. In addition, there is a count of the number of pages given to stories about females. Altogether, eight series are analyzed. A tabular presentation of the changes by grade level shows that females diminish in presence as one goes up but they are in the minority from the primer level on. Descriptive analysis of the content of the roles is presented and does not suggest any fairer treatment of girls and women than elsewhere noted. No tests of significance are reported.

Preston, Patricia. "Our Language Arts Texts Teach Sex Discrimination." The British Columbian Teacher.
4 (January 1972): 137-142.

Also in: *The Woman in Canadian Society*. New Westminster, B.C.: Douglas College, 1972.

Book-by-book analysis of two language arts series used in British Columbia. Again, males are overrepresented and both sexes are stereotyped. Statistics have to be teased out of the text. This article may be found in the Turner book in the Ontario Ministry of Labour Library. Edited by Lynda Turner. P. 11-16.

Textbook Study Group, Regional Municipality of York. *Brief on Sex-Role Stereotyping in Ontario Primary Readers*. September 1972. 4 pp.

A study of all of the Primary Division readers listed in *Circular 14*, 1972 edition, of the Ontario Ministry of *Education*. These readers, approved for use in the public schools, led to some general conclusions similar to those in other studies. Neither the method nor findings are specified. Recommendations for changes in content are made.

Vancouver Status of Women. *Teacher's Cope-kit for Sex-role Stereotyping in Elementary Readers*. Vancouver: Vancouver Status of Women, 1973.

Detailed analysis of two reader series used in Vancouver, which started as a study of sex role stereotypes and added other findings about biases against old age, minority groups and the outdated attitudes of human characters toward the hunting of animals. Visibility counts of males and females in a book-by-book analysis is complemented with a discussion of the action and stereotypes. Some story-by-story discussion.

Wright, Vicki. "The Rape of Children's Minds." *Interim Report No. 2*. Ad Hoc Committee Respecting the Status of Women in the North York System. North York Board of Education, 29 May 1975.

A study of the four most commonly used reader series in Grades 1, 2, and 3 in North York elementary schools. Visibility of males is clearly established as greater than that of females. Sections of discussion include: (1) sexism and stereotyping through plots, settings, themes, (2) sexism and stereotyping through approach, unreality as reality: absence of human dimensions in characterization, (3) unreality as reality: children as stereotyped by their problems, (4) unreality as reality: clothing, (5) racial and ethnic prejudice, (6) animal stories, and (7) nonfictional items, poetry, humour, folk and fairy tales. Recommendations are made.

### U.S. STUDIES OF READERS AND LANGUAGE ARTS TEXTS (p. 59)

Child, Irvin L., Potter, Elmer H., and Levine, Estelle M. "Children's Textbooks and Personality Development: An Exploration in the Social Psychology of Education." *Psychological Monographs*.

60 (1946): 1-54.

The classic reference for students of sex role stereotyping in children's books and textbooks. All general Grade 3 readers published in the U.S. between 1930 and 1945 were examined for the values that they conveyed to children. Although differential treatment of the sexes was not one of the main purposes of the study, they nevertheless saw the evidence as the single most striking finding. Their generalizations must be tempered by weighting the incidences of behaviours by the numbers of males and females in the units of analysis (see text for a more detailed discussion). They did show, however, without a doubt, that males are overrepresented and that they are much more rounded individuals. Females are underrepresented and within that limited situation are shortchanged even more in the range of behaviours attributed to them.

Frasher, Romona, and Walker, Annabelle. "Sex Roles in Early Reading Textbooks." *The Reading Teacher*. 25 (May 1972): 741-749.

Readiness books and first- and second-grade readers from four major basal reading series were analyzed for distribution of main characters by story, adult positions and roles, child activities, and play. Females were underrepresented and both sexes were stereotyped. The writers point out the disservice to boys with reading difficulty of the image that they see in books of the continually active (by definition, the non-reading) boy. Reading is not valued as a boy activity, even in readers.

Graebner, Dianne Bennett. "A Decade of Sexism in Readers." *The Reading Teacher*. 26 (October 1972): 52-58.

This comparison of readers from two publishers shows that changes over the decade (1960s) were in the direction of less visibility of girls but more of women. All characteristics were attributed more to all children but the percentage distribution resulted in an increase in the proportion attributed to males, including the passive and dependent categories. Variety of occupations for all people increased with a larger proportional increase for women, but the final proportions were 26 for women and 73 for men.

Kidd, Virginia. "Now You See, Said Mark." *New York Review of Books*, 3 September 1970, pp. 35-36.

In a letter to the editor, Kidd reviews the series of readers read by 376,500 children in Grade 1 in California. She points out the examples of sex role stereotyping in the readers.

Stefflre, Buford. "Run, Mama, Run: Women Workers in Elementary Readers." *Vocational Guidance Quarterly*. 18 (December 1969): 99-102.

A comparison of fictional occupations in readers and real occupations shows working women underrepresented but within the working group, professional women are overrepresented. The readers were primers and basic texts, first through sixth grade, of six major publishers. Stefflre suggests supplementing this information with a variety of other projects which would communicate the variety available to women. He does not suggest changing the texts.

Taylor, Marjorie E. "Sex-role Stereotypes in Children's Readers." Elementary English. 50 (October 1973): 1045-1047.

Discussion of an unspecified sample of California's state-adopted elementary reading textbook series. Mostly discursive with a few statistics. Females are shown as underrepresented and incompletely described.

U'ren, Marjorie B. "The Image of Women in Textbooks." In Women in Sexist Society--Studies in Power and Powerlessness, edited by Vivian Gornick and Barbara K. Moran, pp. 218-225. New York: Basic Books, 1971.

See p. 222 for abstract.

Weitzman, Lenore J., and Rizzo, Diane. "Images of Males and Females in Elementary School Textbooks in Five Subject Areas." Biased Textbooks. Washington, D.C.: Resource Center on Sex Roles in Education, National Foundation for the Improvement of Education, 1974.

See p. 222 for abstract.

Women on Words and Images. Dick and Jane as Victims: Sex Stereotyping in Children's Readers. Princeton, N.J.: Women on Words and Images, 1972.

This study of 134 elementary school readers from 15 different publishers and used in three suburban New Jersey towns has been used by many people as a basis for the conclusions that textbooks are stereotyped. The 15 sets of books were content analyzed for active mastery themes and second sex themes and found to be stereotyped. The question of the underrepresentation of females was asked and confirmed. Adult role models and biographies are singled out for examination and the underrepresentation was quite apparent. A re-examination of some of the statistics on themes is done elsewhere in this text.

Zimet, Sara G. "Males and Females in American Primers from Colonial Days to the Present." What Children Read in School. New York: Grune and Stratton, 1969.

This study, first published in 1969, looks at presence of boys and girls and their activities and behaviour expectancy in primers from 1600 to the present. In the beginning, male characters outnumbered female but around 1898 the proportions switched and girls now outnumber boys. Sex role diffusion was judged so widespread that one could not tell the boys from the girls or the men from the women. The author felt that this lack of clear-cut sex roles was an attempt to deny inequities in the society and felt that it was a loss because it also denied differences.

### CANADIAN STUDIES OF ARITHMETIC, MATHEMATICS AND SECOND LANGUAGE TEXTS (p. 63)

Dunnigan, Lise. *Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec*. Quebec: Conseil du statut de la femme, Septembre 1975.

See p. 221 for abstract.

Fleming, Joyce. "Resolution: Text Books." Paper presented to Business and Professional Women's Club, North Toronto District, Fall 1971. Mimeographed.

See p. 221 for abstract.

### U.S. STUDIES OF ARITHMETIC, MATHEMATICS AND SECOND LANGUAGE TEXTS (p. 64)

Burstyn, Joan N., and Corrigan, Ruth R. "Images of Women in Textbooks: 1880-1920." *Teachers College Record*. 76 (February 1975).

Weitzman, Lenore J., and Rizzo, Diane. "Images of Males and Females in Elementary School Textbooks in Five Subject Areas." *Biased Textbooks*. Washington, D.C.: Resource Center on Sex Roles in Education, National Foundation for the Improvement of Education, 1974.

See p. 222 for abstract.

### CANADIAN STUDIES OF SOCIAL STUDIES AND HEALTH TEXTS (p. 65)

Atnikov, Pamela, Oleson, Irma J., and McRuer, Glen. *A Study of Social Studies Textbooks Approved For Use in Manitoba Schools*. Winnipeg: Manitoba Human Rights Commission, 1971.

This study of forty-five authorized textbooks in history, geography, and social studies for Grades 4 to 12 was analyzed for bias of all types using the McDiarmid and Pratt method. The analysis of the treatment of women showed that when treated the average was in the neutral range. The authors, however, concluded that women were discriminated against by omission, stereotyping, and imbalanced treatment. There is a book-by-book analysis.

Cullen, Linda. *A Study into Sex Stereotyping in Alberta Elementary School Textbooks*. Edmonton: Alberta Human Rights Commission, Summer 1972.

See p. 221 for abstract.

Dunnigan, Lise. *Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec*. Quebec: Conseil du statut de la femme, Septembre 1975.

See p. 221 for abstract.

McDiarmid, Garnet, and Pratt, David. *Teaching Prejudice: A Content Analysis of Social Studies Textbooks Authorized for Use in Ontario*. Toronto: Ontario Institute for Studies in Education, 1971.

This is a classic study of texts in Ontario. The researchers employed a technique called evaluation assertion analysis. It allowed them to examine ethnic stereotypes in social studies texts.

## U.S. STUDIES OF SOCIAL STUDIES AND HEALTH TEXTS (p. 68)

American Association of School Administrators. *Sex Equality in Educational Materials*. AASA Executive Handbook Series, vol. 4.

Burstyn, Joan N., and Corrigan, Ruth R. "Images of Women in Textbooks: 1880-1920." *Teachers College Record*. 76 (February 1975).

See p. 222 for abstract.

Frisof, Jamie Kelem. "Textbooks and Channeling." *Women: A Journal of Liberation*. 1 (Fall 1969): 26-28.

A descriptive analysis of selected social studies texts (U.S.) written for use in Grades 1 to 3. The main analysis is of the work world and women are underrepresented. Analysis of main characters shows more boys than girls and more interesting actions being attributed to males. Some frequencies of sex distribution in illustrations is included.

MacLeod, Jennifer S., and Silverman, Sandra T. *You Won't Do: What Textbooks on U.S. Government Teach High School Girls*. Pittsburgh: KNOW, Inc., 1973. 109 pp.

This extensive study of eight textbooks on U.S. government used in senior high schools yielded three major findings. Women are largely left out of such texts, they are demeaned, and important historical events involving women are ignored. An extensive set of recommendations is made and an annotated source list of more than 150 studies and remedies is included.

Rosen, Ruth. "Sexism in History or, Writing Women's History Is a Tricky Business." *Journal of Marriage and the Family*. 33 (August 1971): 541-544.

Examples of patronizing treatments of women's history are contrasted with those who take women's history as valuable. Several books on the subject put undue emphasis on women's relationships to men, although that is not the main topic, and the authors reveal that they see women as a class with a great deal of homogeneity summed up in the concept of "women's nature."

Trecker, Janice Law. "Women in U.S. History High School Textbooks." *Report on Sex Bias in the Public Schools*, p. 44.

Also: "Women in U.S. History Books." *Social Education*. 35 (March 1971): 249-261, 338.

In the course of criticizing U.S. history texts, Trecker suggests in great detail the kinds and sources of material that should have been included. She recognizes the impossibility of certain questions of inclusion, but does make some telling points. One text, for instance, spends most of its time on women in a discussion of the length of women's skirts. This article outlines so many more important issues concerning women that the answer to the question of what to include becomes self-evident. The texts studied are listed, and rarely-seen pictures of well-known women are featured throughout the article.

Weitzman, Lenore J., and Rizzo, Diane. "Images of Males and Females in Elementary School Textbooks in Five Subject Areas." *Biased Textbooks*. Washington, D.C.: Resource Center on Sex Roles in Education, National Foundation for the Improvement of Education, 1974.

See p. 222 for abstract.

### STUDIES OF NATURAL SCIENCE TEXTS (p. 73)

Cullen, Linda. *A Study Into Sex Stereotyping in Alberta Elementary School Textbooks*. Edmonton: Alberta Human Rights Commission, Summer 1972.

See p. 221 for abstract.

Dunnigan, Lise. *Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec*. Quebec: Conseil du statut de la femme, Septembre 1975.

See p. 221 for abstract.

Weitzman, Lenore J., and Rizzo, Diane. "Images of Males and Females in Elementary School Textbooks in Five Subject Areas." *Biased Textbooks*. Washington, D.C.: Resource Center on Sex Roles in Education, National Foundation for the Improvement of Education, 1974.

See p. 222 for abstract.

### STUDIES OF RELIGION BOOKS (p. 74)

Dunnigan, Lise. *Analyse des stereotypes masculins et feminins dans les manuels scolaires au Quebec*. Quebec: Conseil du statut de la femme, Septembre 1975.

See p. 221 for abstract.

### CANADIAN STUDIES OF CHILDREN'S PICTURE BOOKS (p. 75)

Cheda, Sherrill. "See Dick Run, See Jane Sit." *Chatelaine*, December 1972, pp. 40, 52.

This essay outlines some findings from a non-random sample of picture books from the Toronto Public Library and reviews the Weitzman et al. (1972) study findings. Suggestions for stereotypes which should be banned and books which have positive and exciting images of girls and women.

Fischer, Linda, and Carter, Patricia. "Sex Role Stereotyping in Children's Picture Books." Mimeographed. Waterloo: University of Waterloo, 1976.

A sample of books at two points in time from the Hamilton Public Library, main branch, shelf list shows that females are underrepresented and that girls are relatively restricted in the activities that they do. Boys do things that girls do and more often than girls do them. Boys also do things that girls do not do at all. The only activity that girls do more than boys, and which was statistically significant, was "panicking in a crisis." There was no improvement in the situation from the 1972 sample to the 1975 sample.

Hunter, Beryl M. "Sex Role Portrayal of Children in Picture Books." Mimeographed. London, Ont.: School of Library and Information Science, November 1972.

Using the set of themes from the study of texts by Women on Words and Images, Hunter read 255 picture books and coded them. The books were all the picture books in the collection in one school which dealt with children in an environment familiar to them and that had plausible action on the part of the children. Animal-only stories, fantasy stories and ABC books were excluded. The author concludes that most active mastery themes involve boys more often than girls. Most second sex themes involve girls more often than boys. No tests of significance or weightings by sex distribution were applied.

Pyke, Sandra W. "Children's Literature: Socialization and Sex Roles." Paper prepared for an Independent Symposium: On Women, by Women, June 1972, Montreal. Mimeographed.

One hundred and two picture books were randomly selected from fifteen publishers' and distributors' 1971 catalogues of children's books. A second sample of forty-seven books was comprised of books considered popular in four main libraries of a metropolitan area. The two samples were examined, page by page, for occupations, activities, and playthings associated with either gender. Elements associated with males were much more varied than elements associated with females, although both were judged unrealistic to a certain extent. Of those elements which were stereotyped there was some tendency for the male elements to be instrumental and the female ones to be expressive. A copy of the paper was obtained in the Women's Bureau Library of the Ontario Ministry of Labour.

U.S. STUDIES OF CHILDREN'S PICTURE BOOKS (p. 77)

Czaplinski, Suzanne M. Sexism in Award-Winning Picture Books. Pittsburgh, Pa.: KNOW, Inc., 1973. 104 pp.

Feminists on Children's Literature. "A Feminist Look at Children's Books." Library Journal. 96 (January 1971): 235-240.

A review of books recommended in Notable Books of 1969, published by the American Library Association; the list of books recommended by the Child Study Association of the same year; and all of the Newberry Award winners showed very few books which this feminist group could recommend. In this essay, which was originally a presentation for people in the book industry and accompanied by slides, the authors divide books into sexist, cop-out, and ones with positive images. They make recommendations.

Heyn, Leah. "Children's Books." Women: A Journal of Liberation. 1 (Fall 1969): 22-25.

In one of the earliest published articles on the question of sex role stereotypes in children's books, Heyn outlines the functions of books in a young child's life. She sees these as contributing directly to a child's growth through development of the senses, idea reinforcement, and knowledge expansion among others. With this frame of reference she goes on to examine the role of women in children's books. She shows a wide knowledge of the children's literature at that time and points out the paucity of non-stereotyped role models in the literature that she knows. Her conclusions would be the same if they were based on a systematic study.

Key, Mary Ritchie. "The Role of Male and Female in Children's Books: Dispelling All Doubts." Wilson Library Bulletin. Also in: American Teacher, February 1972.

A review of the literature reveals that females are under-represented in picture books and textbooks. Key discusses some of her own work which shows the same. She turns her linguistic skills to the question of language.

Nilsen, Aileen P. "Books a la Mode: A Reader's Digest." Elementary English. 50 (October 1973): 1029-1033.

This article questions the values which led to depriving girls of models in order to help slow male readers. Nilsen sees the charges in historical context and illustrates the point with an analysis of illustrations in Caldecott Award winners over time and a few very recent texts. There is some overlap with her 1971 article.

Prida, Dolores, and Ribner, Susan. "Feminist Look at the 100 Books: The Portrayal of Women in Children's Books on Puerto Rican Themes." Interracial Books for Children. 4 (Spring 1972): 7-10.

The findings for the study of sex role stereotypes in 100 books published by U.S. publishers between 1932 and 1972 are similar to those of books about anglo children.

Considering the books on fantasy or fiction only, boys are main characters in 32 books and girls are main characters in 18. In picture books, girls are very, very restricted in activity. In six of the 8 books about girls, they are pictured playing with dolls. Dolls are the foci of three of those books. The stereotypes show girls placid and boys active, although in the books for older children, there are a large number of male juvenile delinquents.

Rinsky, Lee Ann. "Equality of the Sexes and Children's Literature." Elementary English. 50 (October 1973): 1075-1092.

This is an analysis of gender of authors of children's literature. Three samples of 200 books each were drawn from (1) Children's Literature in the Elementary School by Huch and Young, (2) Children and Books by Mae Hill Arbutlist, and (3) from the lists of books used in the author's classes in Children's Literature. The samples did not show much difference between numbers of male and female authors. Illustrators were said to be two males to each female. Four times as many men wrote informational books as women.

Weitzman, Lenore J., Holtz, Sara, and Pillsbury, George. Sex-Role Stereotypes in Grammar School Textbooks. Davis, California: Institute of Governmental Affairs, University of California (95616), 1973.

## RELATIONSHIP BETWEEN STEREOTYPING AND CHILDREN'S ATTITUDES AND BEHAVIOUR (p. 155)

Fennema, Elizabeth. "Sex Differences in Mathematics-Learning: Why???" The Elementary School Journal, December 1974, pp. 183-190.

Prior to entering school and through Grade 4 children perform equally on mathematics skills. After Grade 4, however, boys tend to be more skilled at abstract reasoning and problem solving and girls tend to be more skilled at routine calculations and repetitive exercises. The author reviews the literature of biological and cultural causes for this and concludes that the weight is with the cultural explanation. Fennema ties it in with the life-cycle phase in which children are concentrating more on preparing for their adult roles than ever before. Stereotyped notions of adult roles are thought to account for solving or risk taking areas.

Forsland, Morris A., and Hull, Ronald E. "Teacher Sex and Achievement Among Elementary School Pupils." Education. 95 (Fall 1974): 87-89.

The sex of the teacher does not affect achievement scores of children in Grade 6. More boys achieve higher marks in science than girls. More girls achieve higher marks in language arts than boys.

Hartley, Ruth E. "Children's Concepts of Male and Female Roles." *Merrill-Palmer Quarterly*, Winter 1959, pp. 83-91.

Children were asked several projective questions about the roles of men, women, boys and girls. Three age groups, five, eight, and eleven described people largely in terms of family roles. Although 27 percent of the activities attributed to male adults were work-role related, only 6 percent of women's activities were. The largest single category of activities was the traditional domestic activities of women. Men were described as much more varied. When asked how a mother in a picture felt about going to work, 36 percent of the children thought she would be happy with her work, while the rest thought she would be unhappy to leave her child. Fathers were perceived as somewhat more happy about work. Daughters of working women (half the female sample) were more likely to mention work plans and also more likely to mention non-stereotyped occupations than daughters of non-working women.

Kimmel, Eric A. "Can Children's Books Change Children's Values?" *Educational Leadership*. November 1970, pp. 209-214.

A review of the literature leads the author to conclude that print media available to children is inadequate in its treatment of ethnic and minority groups; that children are affected by things they read (especially voluntary reading); and that little long-term effect can be produced by print media in the area of reduction of prejudice.

Maccoby, Eleanor E. "Effects of the Mass Media." In *Review of Child Development*, edited by Martin L. Hoffman and Lois Wladis Hoffman, vol. 1. New York: Russell Sage Foundation, 1964.

Maccoby concludes from a review of the literature that media does affect children's moods and ideas. See Chapter 3 of this volume for a quote from her summary.

Moglia, Ronald J., and Abraham, Eugene C. "Sex Roles in a Changing Society." *Childhood Education*. November 1973, pp. 115-117.

This review of the literature seeks to answer the question, What types of classroom conditions and situations can be established in order for us to most effectively help children develop their sex role which will be so important for them in the future? The authors conclude that in view of changing roles, children must be prepared for interchange in roles in the future.

Schlossberg, Nancy K., and Goodman, Jane. "A Woman's Place: Children's Sex Stereotypes of Occupations." *Vocational Guidance Quarterly*. 20 (June 1972): 266-270.

Children in two different types of elementary schools--a U.S. model cities project school and a middle-income

school--showed a tendency to stereotype occupations as male or female. They were more rigid about lower status occupations and did not see themselves as crossing the line at all.

Tibbitts, Sylvia-Lee. "Sex Differences in Children's Reading Preferences." The Reading Teacher. 28 (December 1974): 279-281.

Sex differences in reading preferences do not emerge strongly until about age nine or ten when boys reject stories about girls. Girls still read stories about boys, although few are interested in sport or war stories. The author attributes the late development of sex differences to cultural factors.

Wiberg, John L., and Trost, Marion. "A Comparison Between the Content of First Grade Primers and the Free Choice Library Selections Made by First Grade Students." Elementary English. 47 (October, 1970): 792-798.

Of interest to this review is the finding that boys select boy-activity books in free choice situations and girls do not have a preference. The authors attribute this to the greater need for boys to affirm their sex role identity in face of the feminized home and school environment. They seem to have expected that girls would choose girl-activity books and do not try to explain why they do not. They have looked no further than the relative numbers of boy- and girl-activity books in the sample and the content of each.

# Part 2: The Search for Biological Origins of Sex Roles

1. INTRODUCTION
    - Intentions and Assumptions of This Review
    - Organization of This Review
2. DIFFERENCES AND SIMILARITIES BETWEEN THE SEXES ON SELECTED CHARACTERISTICS
    - Patterns of Genital Development
    - Patterns of Hormonal Development
    - Cerebral Electrical Activity
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    - Sensory Processing
    - Motor Abilities
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3. TOWARDS AN INTERACTIVE APPROACH WHICH LEADS TO AN APPRECIATION OF THE PLASTICITY OF INDIVIDUALS WITH REGARD TO SEX ROLES
    - Hormones and Cognition
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    - Stereotyping, Sex Preference, and Spatial Perception
4. CONCLUSION

ABSTRACTED BIBLIOGRAPHY

# 1. introduction

## INTENTIONS AND ASSUMPTIONS OF THIS REVIEW

The argument about the origin of observable (and often imaginary) sex differences concentrates on biological causes versus social causes. People have taken quite strong stands on either side of the issue. To some, masculinity and femininity[1] are determined solely by biological factors such as hormone balance. To others, only our reproductive functions are not determined by social and cultural factors. Most scientists and lay people, however, will admit that both factors help to mold humans into men and women as we know them. Archer and Lloyd (1974) have examined the various approaches and have proposed an interactionist point of view as a way to take the best of all of the approaches.

One type of interactionist perspective is that biology sets the limits, and social situations determine what a person does within those limits (e.g., an athlete has certain abilities which can be enhanced by training, which is in turn motivated by interest and the support of others).

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[1] The terms "masculinity" and "femininity" are used here to mean those biological and psychological characteristics which are traditionally thought to be associated with males and females. For males, for example, this may include larger size, greater strength, assertiveness and greater intelligence. For females, this may include smaller size, less strength, passivity, an interest in people, and a talent for homemaking and child-rearing. There is no exact agreement among people about all of the characteristics involved. Social scientists have not been able to agree on the precise meaning of femininity or masculinity either.

Another interactionist view calls for a recognition of the fact that biological factors do not set absolute limits for individuals, but that social factors can also cause a change in the biological limits. An example from animal research is the effect that losing in a confrontation can have on the hormone levels. Before the confrontation, certain hormones are measurable in high amounts for both antagonists. Afterwards, the loser is much lower in these same hormones than the winner. Another example from animal research is the rise in hormone levels when the opportunity for sexual relations is present, as opposed to when the opportunity does not exist.

The interactionist approach, which examines the influence of the social on the biological and the biological on the social, seems the least biased. It encourages the fair examination of the question of the extent of differences and similarities. Most research available today does not take this interactionist approach so that the summarizing discussion and the abstracts do not reflect the interactionist approach as much as would be desired.

In addition, since the social influences have been well documented in many sources, the concentration in this discussion will be on biological and interactive approaches. For well-written descriptions of social influences, see Henshel

(1973), Oakley (1972), or Chafetz (1974).[2] For an overview of the biological determinist approach see Hutt (1972). For a specialized argument of the biological determinist type, see Goldberg (1973). For an overview of the interactive approach, see Archer and Lloyd (1974)[3] and some of the following material.

One of the mandates of this review of the scientific literature was to ascertain the biological bases of sex differences to the extent that they are known. This question should be slightly modified if the interactionist approach is taken, but the question and the answer get very complex. There is a danger, as Archer and Lloyd point out, that the complexity of the model will lead people to reject it.

The scientific literature at present does not even allow a critical examination of the extent to which differences do exist. Many times when differences are reported, one cannot assess the degree of those differences.

The research reported here suggests that there are differences between group measures of males and females (e.g., there are few differences beyond chromosomes, the structure of the genitals, and hormone levels which absolutely distinguish between all males and all females). For most physiological characteristics there is as much or more variation within the category (e.g., height of males) as there is between the categories (e.g., the average height of males versus the average height of females).

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[2] Canadian, British and American respectively. All include cross-cultural comparisons. See abstracts on pp. 271-272 of this part of this report.

[3] In the 1974 article, "Sex Roles: Biological and Social Interactions," in New Scientist, a book "Exploring Sex Differences," was announced as forthcoming. It had not been located at the time of this writing.

If one cannot assess the extent of difference, then clearly the data are not there to further ascertain the interaction between the individual's biology and the social situation. In other words, there is a large gap between the conceptualization of Archer and Lloyd and the published research results available.

The review of the psychological literature (Part 3 of this report), in conjunction with the more extensive review by Maccoby and Jacklin (1974) showed quite strongly that many beliefs about psychological and mental ability differences between the sexes were not consistently supported by research. Some differences were found and some research showed lesser tendencies toward the favouring of one sex over another. The review of the scientific literature attempted in Part 2 is therefore limited to the literature examining the sex differences in the nervous and endocrine systems in infancy and in puberty. The intention is to seek biological causes for any of the ability and behavioural differences that are found. This review has also focused on reviews of areas of research rather than on reports of single research experiments, although some of the latter are included.

Much research is still not done. As McGuinness says in a review of perceptual abilities:

> While this is a reasonably comprehensive list of differences in perceptual capacities, it is important to remember that much of Guilford's catalogue of informational parameters has remained uninvestigated. Little is known about processing auditory or kinaestheic figural information. The entire area of "behavioral intelligence" is uninvestigated, with the exception of certain studies of person perception and non-verbal communication, which however, seldom assess sex differences.

An attempt was made in this review to assess which differences reported were ones which distinguished between all or almost all males and all or almost all females, and which were reports of tendencies. In the latter case, a difference *might* be close to equality, but because statistical techniques can be sensitive (especially with large samples) it can lead to a statistically significant difference where the difference is not socially significant.

Either of the above two situations (profound differences or barely assessable differences) and many in between can lead to a similar summary statement. One such statement is that boys are more aggressive than girls.[4] This can mean that all (or almost all) boys are more aggressive than all (or almost all) girls, or it can mean that a few more boys than girls are considered aggressive, or have engaged in aggressive behaviour. The latter type of situation can mean that 95 percent of males engaged in aggressive behaviour but only 90 percent of females did, or it can mean that 55 percent of males were aggressive and 45 percent of females, or it can mean that 5 percent of the boys were engaged in aggressive acts, while only 3 percent of the girls were. In all three of these examples (not entirely fictional),[5] as well as other, more clear-cut differences, the generalization is that "boys are more aggressive than girls." The same conclusion could more legitimately come from a 60-40 split or a 75-35 split or a 90-50 split. This suggests that the generalizing statement is often too loosely applied.

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[4] Aggression is chosen as an example here *despite* the problems in definition. It has some scientific support in research on Western children (see Maccoby and Jacklin 1974) and there is a good example in Chodorow (1971) to illustrate the point being made.

It was the assumption of the authors that readers have a right to clear information so that they may have the opportunity to decide for themselves whether classifying people according to gender is justifiable or not. For instance, given that a summary of the research shows that males have less verbal ability than females (see Maccoby and Jacklin 1974) could this be a justification for channeling all boys into math and science rather than being sensitive to individual differences? Common sense and experience in the classroom suggests that this is not only impractical, but not often obviously or consciously done in the early grades. A more sensitive reading of the facts shows that the difference only emerges statistically at age eleven, so there would be no justification for channeling prior to that time anyway. The interactive approach would suggest that subtle expectations and rewards may have previously affected the use made of motor and cognitive abilities.

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[5] Nancy Chodorow, "Being and Doing: A Cross-Cultural Examination of the Socialization of Males and Females" in Woman in Sexist Society, ed. Vivian Gornick and Barbara K. Moran (New York: Basic Books, 1971).

Given this example, the question addressed in this review is whether there are any biological bases for the emergence of a difference in verbal abilities at age eleven or, for instance, the emergence of spatial abilities differences (favouring males) at age ten. Given that beliefs of these differences prevail, and that few people make distinctions of age along with sex, the observable differences could be generated by expectations of parents and teachers. At this time there is still no answer to this question, but the interactionist approach would address it directly without ignoring either biological or social influences.

Although the intentions were to present a well-laid-out summary of differences and similarities so that readers could judge the evidence for themselves, it has proved impossible. The published pieces reported here just did not report their results in a manner that allows such subtleties to be extracted. The differences reported by the researches will be summarized as their authors have reported them, but the qualifications of interpretation will be mentioned each time.

## ORGANIZATION OF THIS REVIEW

The reader will appreciate the conflict involved in presenting highly technical material to an audience with varying backgrounds. This has been only partially solved by the following organization of materials. The bulk of the information which summarizes the research is included in the abstract section which was prepared to D.D. Radcliffe and K. Pemberton. This is a very technically-oriented section, employing the vocabulary of the scientists doing the work. The essay which summarizes work reported in the abstracts is presented in a less intense, less jargon-dependent manner. It was not, however, within the authors' capabilities to produce a jargon-free essay.

Within the essay section, and within the abstract section, there are two main subject headings. The first section examines biological differences and similarities of behaviours which are least susceptible to social influence. The second section examines evidence of the plasticity of sex roles[6] because researchers looking at biological development of males and females have found that certain characteristics have been shown to be extremely malleable in response to changes in the situation. The assumption is an interactionist model, although that is not always obvious in the original authors' works.

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[6] Some scientists use the term "sex roles" for behaviours which are exclusive to one sex or the other (such as reproduction), and "gender" roles for behaviours which are presumed to be culturally determined. These authors have made no assumptions about cultural determination, so use the terms interchangeably.

# 2. Differences and Similarities between the Sexes on Selected Characteristics

## PATTERNS OF GENITAL DEVELOPMENT

The first and least arguable difference between the sexes is the primary difference found in the sex organs. Jost (1973) reviews the literature on the development of the genitals in the fetus.

An earlier theory was that the developed female organs were an arrested stage of the male development. The more recent experimental work which has been done on animals suggests that the primary structure is a female structure. The presence of a Y chromosome causes the male structure to develop from the female one. Without the presence of a very strong overriding influence, the female form will prevail. Money and Tucker (1975) take a somewhat more neutral view of the process. They view the basic structure as undifferentiated. If a Y chromosome is present, then male organs develop. If an X chromosome is present, then female organs will develop (about three weeks later than the male organs would have).

Money and Tucker (1975) in their book Sexual Signatures (written for the lay person) use case studies of persons whose genital structures were not well-defined at birth, to draw some conclusions about normal sexual development. Money and Tucker show how individuals with anomalies of external genital structure were incorrectly assigned a gender designation at birth. These children can function quite well until puberty presents them with either breasts or beard and lowered voice and the biological problem is recognized. At that time they can be given hormones (appropriate to the sex of their rearing) to override the hormones appropriate to their biological sex and continue to function as before. Although there are not hundreds of cases like this to show a pattern, the few cases which have been observed suggest that social values attributed to the genitals guides definition of the behaviour. Money and Tucker point out that the human being is a very plastic being. (This will be discussed at length in the second section. The book is appropriately mentioned here because of a technical discussion of genital development.)

Money and Tucker see the determination of sex and the subsequent biological and social development as a series of points on a continuum, where a choice between two or more branches must occur. In the case of the biological development of the genitals, the choice is between two alternatives. At other choice points, there are often more alternatives. This is more and more true of behaviour as the person gets older. Despite this branching, Money and Tucker describe the end result as a person who has some male and some female characteristics.

Jost (1973) also showed that in animals, intact and normally functioning, testicles were necessary to impose a male pattern on an otherwise basically female pattern. He examined evidence of this with regard to the development of the nervous system and primary and secondary sex characteristics. Money, in 1973, suggested the same pattern when discussing inappropriate excesses and deficiencies of androgen, a masculinizing hormone.

Money examines cases where excess androgen was present prior to birth and its effect on males and females, as well as cases of an androgen deficiency or insensitivity in males. Excess androgen can occur because the mother is treated with a drug which stimulates its production or because a malfunction in the fetus leads to excess production. When this occurs to a fetus who is genetically female, it results in some genital anomalies and requires corrective surgery and hormone supplements. Girls who are subject to this anomaly tend to be very active, but not overly aggressive. Boys who are overandrogenized have a more masculine body type, although they are seldom taller than five feet. They tend to be gentle people. Males who cannot make use of the androgen in their body (an extremely rare condition) tend to follow a more female pattern, in certain sexual behaviours, than the average male.

## PATTERNS OF HORMONAL LEVEL DEVELOPMENT

Gupta et al. (1975) report the first monitoring of levels of four hormones (two estrogens and two androgens) simultaneously in adolescents over the period of sexual maturation.

They used maturational stages, rather than ages, as points along the time continuum, and monitored the boys and girls from pre-puberty through adulthood. Their charts allowed a very clear estimate of both the group differences and the overlap between the groups.

For the first estrogen, estrone, boys and girls were virtually equal at stage 1 and the range of variations was quite small. Both boys and girls increased in levels through the last stage, but there was a greater increase for the group of girls than for the group of boys. At the adult stage, the distributions still have considerable overlap. For instance, the average for females is about 6.8 ng/100 ml and the average for males is about 4.8. The range for females is about 3.7 to 10.1, so it clearly includes the male average.

The second estrogen, estradiol, showed a similar, equal start at stage 1. Girls increased much faster than boys who did not increase as much as with estrone. By the fourth stage the distributions did not overlap, and by the adult stage the distance between distributions was profound. The lower end of the female range was three times the mean for males and the female mean was almost five times the male mean.

The androgens are measured in higher quantities than the estrogens, and the differences between males and females are greater. For both androgens there are only three stages where the male and female distributions overlap. The last four stages of dihydrotestosterone are about 15 ng/100 ml for girls. For boys the mean level goes from 20 to 56.

Testosterone levels are measured in the hundreds for boys and men, but never go over 75 for girls. There is virtual equality for the first two stages, but the male pattern rises from a mean of about 75 ng/100 ml in stage 3 to a mean of almost 600 in adulthood. The range of male adult values was from about 450 to 750 (while the female values were all less than 75).

## CEREBRAL ELECTRICAL ACTIVITY

The previous two developmental sections were aimed at biological characteristics which are part of the definition of sex. This and the following sections are aimed at discussing what material is available on the differences and similarities of other biological and behavioural characteristics. The order of these sections has been designed to follow a line of increasing complexity of integration of stimuli and processes. This is a rough progression of categories and does not apply to every piece of research reviewed within it.

Lay opinion of the differences between the sexes often focuses on differences in brain function and emotions. This and the following sections focus on research on brain functioning, and some differences and similarities between the averages of the two sexes are found.

A sample of Swedish children (401) and adolescents (160) of both sexes were given EEGs to determine brainwave patterning (Matousek and Peterson 1973). There were no differences between the average patterns of boys and girls, although there were differences within each category. There were some differences noted in the adolescent sample. The average proportion of beta wave activity[7] was greater for the adolescent girls as a group than for adolescent boys as a group. This was attributed by the researchers to an increased anxiety shown by some of the adolescent girls to the testing situation.

Since the authors of this article presented enough data to allow some critical analysis by the reader, such an analysis will be attempted as an illustration of the approach which should be systematically applied to all such data.

Matousek and Peterson do not state how they obtained their sample. They note what characteristics were the basis for children not being included, but not what population was the basis for choice (e.g., all children in a town, or all young patients who indicated a need for an EEG in a particular hospital). They do not focus on an analysis of sex differences, but as a result of doing one, they state in their own conclusion "a significantly higher amount of beta activity has been found in girls." As was noted above, the difference was found in adolescent girls only, therefore their own conclusion is misleading.

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[7] An increase in beta wave activity has significance in cases where there are great imbalances in the distribution of the various wavelengths. An overabundance of beta relative to the others is typical of profound mental illness. The indication in the article was that the observed imbalances were only slightly out of line.

Matousek and Peterson use a standard phrasing: "There is a significantly higher quantity in both beta frequency bands..." to indicate the statistical significance of the findings. If one assumes that they are basing this statement on a diagram adjacent to the statement, then the statement really means "The correlation coefficient of about .3[8] was large enough to affirm that there is some association between sex and amount of beta activity but we do not know how much. The percentage of explained variation could vary from .15 to .45 and we would need a larger sample to pin it down more exactly." If it were as low as .15 some would not consider it socially significant, even though it is statistically significant.

## AROUSAL MECHANISMS IN INFANCY

McGuinness (1974) summarized the responses that male and females have been observed to make. Infants' vocalizations vary in type and response. Males are more likely to freely vocalize, while females are more likely to vocalize in response to maternal behaviour. Mothers were more likely to respond to male vocalizations.

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[8] A correlation coefficient of .3 means that 30 percent of the variation among subjects in beta scores is explained by the sex of the subject. Seventy percent is a result of other factors such as age or error in measurement. When a correlation coefficient is said to be significant the statement being made is that it is not equal to zero. The diagram included in the article was useful in that it allowed the additional interpretation of range.

Motor responses show fine motor responses favouring females and gross motor responses favouring males. This affects both the child and the adult.

Zelazo et al. (1975) looked at sex differences in vocalization of infants presented with different stimuli. All were shown an orange cube twice. A control group was shown the same cube twice more. Another group was shown a mildly different cube (same colour, smaller size) and another group was shown a very different item. Both of these groups were shown the orange cube again. There was no appreciable vocalization in response to the very different item. The older girls (11 1/2 months) were more likely to respond to the mildly different item. The older boys and the younger girls were more likely to vocalize when they were bored.

## SENSORY PROCESSING

A review of sensory capacity was done by McGuinness (1974) and focused on the fact that audio abilities are more often found in females than males and that visual abilities favour males. The key variable in both cases seems to be intensity. An ability to distinguish variations in intensity may lead to other abilities traditionally associated with females or males, such as verbal or visuo-spatial ability. More discussion of this line of speculation will be done in the interaction section.

Two of the three studies reported in this section report no sex differences. The basic process being reviewed here is the ability of a person to take some information absorbed through their senses and apply it in some feedback process which can be assessed by a researcher.

Vaught et al. (1975) investigated children's ability to translate touch information into visual. There were no sex differences in ages four to thirteen. Fisher and Rubenstein (1974) asked children ages six to twelve to scan visual material and then audio material for specified cues. They also found no sex differences.

When asked to draw figures of people more girls than boys supplied detail at all ages. It is not at all clear, however, to what extent this skill is innate or learned.

Harris (1975) has a highly speculative piece about the reasons why visuo-spatial abilities are more likely to be found in males than females. He concentrates on the question of the degree to which the brain is specialized, or the degree to which different functions are centralized in one side or the other. Harris's general theory is that females are more likely to have their language function spread over both sides of the brain. If this is true then it is speculated that there are fewer resources for visuo-spatial processing. It is expected that in males, the language function is centred in the right hemisphere and the visuo-spatial is centred in the left.

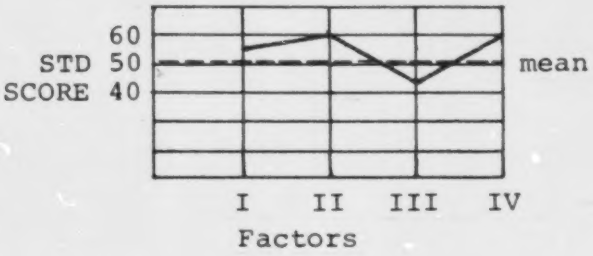
These questions of brain laterality are considered important because it is thought that they point to a greater influence of biological factors. Whether one side of the brain is very dominant or whether the dominance is minor, is thought to be a biologically determined sex difference. Research is yet to be done which would indicate the percentage of males and females with greater or lesser laterality and the direct consequences of these differences.

## MOTOR ABILITIES

Kopp (1974) recorded fine motor movements of eight-month-old infants. Some were well-coordinated and some were clumsy. No sex differences were found, but caution should be applied to the conclusion. The sample was small and this would mean that a large difference would be necessary to achieve statistical significance.

In a rare style of approach and presentation of data, Rarick and Dobbins (1975) looked for types of persons with similar motor performance abilities. After obtaining profiles of eleven types, they looked at the sex distribution of the types. Complex and interesting findings emerge.

Each child was given four scores, each of which was a summary of many measures of body size and motor skills. One such factor (II. Gross Body Coordination) was measured by a combination of skills such as the vertical jump, the 35-yard dash, the standing broad jump, the scramble, and the 150-yard run. The three other factors were called, I. Strength-Power-Body Size, III. Fine Motor Abilities, and IV. Balance. A profile on the four components was pictured as a series of points on a bivariate space, which was further defined by a mean line. For example, person type 5 was as follows:



When factors I and II dominated, the person clusters had more males than females. When factors III and IV dominated, the person clusters had more females. But there is more to it than this.

The positive aspect of this approach is that the types of people were defined first, and then the sex distribution in each type was examined. Instead of finding then that factors I and II are male and III and IV are female, we can see, for instance, that a person with all four scores above the mean is twice as likely to be male (m=6, f=3). It is also obvious from the figures that persons with all four scores below the mean are also twice as likely to be male (m=12, f=5). It is not uncommon in some patterns with three factors above the mean line for there to be a clear bias toward one sex, even though one of the factors is not "sex appropriate." In person type 4, for instance, factors I, III, and IV are above the mean line, and some of the distribution of factor II scores are above the mean line. Despite the fact that the persons in this cluster scored high on body size and strength, there are nine girls and only one boy. In person cluster 5 diagrammed above, there are 7 boys and 3 girls.

A summary of the types suggests stronger differences than a careful analysis of the specifics of the types. To say, as the authors do, that there are five boy-oriented person clusters and six girl-oriented person clusters masks much complexity. Even adding that as many as 27 percent of the girls were in boy-oriented clusters and that 16 percent of the boys were in girl-oriented clusters is a help, but it too hides some complexities.

The emphasis given to this summary at this time, and to the positive aspects of it, are in line with the original high value put on being able to assess the extent to which a stated observed difference clearly cuts between the sexes, or the extent to which it masks overlap.

In Zaichkowsky (1974) no statistically significant sex differences are shown for some aspects of perceptual motor sequencing, although boys seem to have an edge in some categories. A larger sample might have made the difference statistically significant.

## PERCEPTIONS AND COGNITIONS

In 1974, McGuinness surveyed the literature on "Sex Differences in the Organization of Perception and Cognition." Most of the information in this review comes from McGuinness. If time had permitted, the authors of this report would have reviewed all of McGuinness's references because the style of the review paper is once again to make generalizations about differences, without indication of degree of overlap.

Nevertheless, the findings are interesting. After noting that there is a bias in the scientific literature which places higher value on skills (such as spatial abilities) which tend to be found in more males than females, and that information on sex differences is hard to locate, McGuinness goes on to summarize sex differences in response characteristics, sensory sensitivity, and attention. Next, the discussion focuses on the areas where females are more likely to have the advantage in cognitive abilities, and then areas where males have it.

Since the areas of response characteristics and sensory sensitivity have been covered in the sections on "Arousal Mechanisms in Infancy" and "Sensory Processing" respectively, this discussion will focus on the special cognitive abilities in females and males.

More females than males score higher in language ability in nearly every capacity: perceptual, transformational, and in production as well as verbal reasoning. This is true in infancy as well.[9] Also, more girls than boys have shown greater aural sensitivity. Females tend to be favoured in comparisons of visual and verbal recall (short term). Interest in people and other social skills are more likely to be exhibited by females than males at all ages.

More males than females excel in visuo-spatial ability, although this difference does not occur until mid-childhood or later. Males are more likely than females to improve their mathematical ability in early teens. It is thought that this is related to the visuo-spatial advantage. Curiosity is a term which refers to distractability by novel objects, plus impulsive and exploratory behaviour. Males score higher than females on curiosity.

McGuinness makes the point that often certain tests which relate to narrow ranges of behaviour are taken to be indicative of general level of intelligence. Her reading of the literature suggests that tests which favour visuo-spatial aptitudes are often valued higher.

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[9] This aural sensitivity seems to contradict the findings of Maccoby and Jacklin (The Psychology of Sex Differences. New York: Basic Books, 1974) who maintain that it is a myth that girls are aural and boys visual. McGuinness however, found three studies which showed differences in a characteristic that did not appear in Maccoby and Jacklin's summary.

An experiment which was published recently did not produce the sex differences that were expected (Guttentag 1973). McGuinness has suggested ways of thinking about the problem that might shed some light. The experiment in question is a test of both sequential and parallel cognitive processing.

In the sequential, a series of operations was supposed to be applied to a visual scanning for cues. In the parallel, a set of different operations was to be applied simultaneously to a visual scanning problem. Because more females than males have shown aptitude at processing multiple rules simultaneously, and males favour sequential processing, sex differences were expected accordingly.

Guttentag reported that more males than females scored higher on both tasks. McGuinness would have pointed to the visual component and noted that it favoured males and perhaps this overrode the advantage females were expected to have in the parallel processing task.

# 3. Towards an Interactive Approach Which Leads to an Appreciation of the Plasticity of Individuals with Regard to Sex Roles

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## HORMONES AND COGNITION

When considering an interactive approach, it helps to see the biological system as a complex set of systems and consider their interaction with each other, as well as with complex sets of social systems.

The first set of studies by Broverman and associates (1968, 1974) looks at two basic response patterns in relation to hormonal differences. One type of neural response, andrenergetic, facilitates the performance of overlearned repetitive tasks. Another type of neural response, cholenegetic, facilitates problem-solving activities which require the ignoring of obvious stimuli in favour of noticing less obvious stimuli.

An andrenergetic response is activated by both estrogens (female hormones) and short-term stress. A cholenegetic response is activated by both androgens (male hormones) and long-term stress. There is some experimental evidence from animals that the responses produced by each of the stress patterns can be reversed by the appropriate application of hormones. For instance, if repetitive tasks are interfered with by long-term stress, estrogens can restore the balance.

Ehreukranz et al. (1974) investigated testosterone levels in an adult male prison population. There was a definite relationship between testosterone levels and aggression and dominance.

## SENSORY CAPACITY AND COGNITION

McGuinness (1974) speculated about the implications of the auditory advantage of most girls and the visual advantage of most boys. She attempted to construct a career of interaction between those initial advantages and subsequent cognitive abilities.

For most infant girls, an initial sensitivity to intensity of sounds might cause them to orient themselves to human speech. This might, in turn, lead to the focus on verbal communication skills and a greater interest in people, which leads to the social skills listed as a female advantage. Throughout this process, the social systems in which the girls and women find themselves may or may not encourage the development of these skills.

For most infant boys, an initial sensitivity to changes in light intensity and shapes might lead them to focus on the spatial characteristics of their environment. This can give them an advantage in geometry and trigonometry which spills over into other forms of higher mathematics.

# SEXUAL IDENTITY, SEXUAL PREFERENCE, AND COGNITION

In research which investigated the self-image and sex preference of boys and girls there was a suggestion that these factors could influence visuo-spatial skills. Boys who see themselves as more masculine than other boys had higher visuo-spatial scores. Boys who saw other boys as more masculine than themselves had lower visuo-spatial scores. Similar patterns were found for girls. Those who had more masculine self-images also scored higher on visuo-spatial skills. In addition, girls who would rather have been boys also had higher visuo-spatial skills.

It will be a while before the reasons for this association are known. An interactionist approach suggests an examination of the effect of self-image on skills (e.g., a girl who wants to be a boy might do what she saw as "boy" activities and get practice at skills tested as visuo-spatial) or the effect of skills on self-image (e.g., girls or boys who are better at "boy" skills--including visuo-spatial--would see themselves as more masculine or want to be boys if they are girls).

# Conclusion

Despite the emphasis on biological differences between the sexes in the articles included in this review, the evidence presented clearly differentiated only on hormones and genital structures. For all other characteristics there is some degree of commonality between the sexes. Hence, clear-cut differences in many areas have not been established.

There is, at this time, insufficient evidence to establish which characteristics are due to biological influences and which are due to social influences. If one questions the manner in which the biological can affect the social and the social can affect the biological, the potential for unraveling the problem takes a different turn. While the problem of tracing the influence is greatly complicated, neither influence is likely to be denied or ignored. This approach is just beginning to be applied to the area of sex role development.

While the interactionist approach seems most open, there is perhaps another point of view which should be combined with it to avoid the constant pigeon-holing of boys and girls as "normal" or "deviant." This penchant for defining normalcy emerges from the tendency in sex role research to see the world in terms of two types of persons. One of the studies reviewed demonstrated a different approach. Types of persons were allowed to emerge from the data and eleven different profiles were found. Each of the eleven categories of persons were then examined for the distribution of girls and boys. Six had more girls than boys, while five had more boys than girls. Close examination of the types led to much more information about people than would have been obtainable by typing boys and girls first.

## BOOKS WHICH HIGHLIGHT SOCIAL INFLUENCE ON SEX ROLES

Chafetz, J.S. Masculine/Feminine or Human: An Overview of the Sociology of Sex Roles. Itasca, Ill.: Peacock, 1974.

"Masculine/Feminine or Human" is, as the subtitle implies, an "overview" of the sociology of sex roles. Dr. Chafetz directs herself to the questions of: biological and cultural determinants; the role of media and the present educational system in the stereotyping of sex roles; the manner in which the institutions determine the role of either sex and the effect of personal relationships with regard to the imprinting of prescribed roles.

The book begins with a discussion of the effects of biology (gender) and culture (sex roles) on the determination of the nature of the final product. While agreeing with biologists that there is a biological difference between males and females due to a diversity in hormonal secretion and chromosome structure (no acknowledgement of overlap of amounts of hormones in members of each classification is made), she concludes that it is the positive and negative reinforcement of the resulting personality characteristics (referring to male and female characteristics as opposed to the characteristics of any one individual) that may be inherent in the genders which is more important than the initial differences. "Put simply, sex role is more crucial than gender."

In her treatment of sexual deviance (homosexuals, prostitutes and gigolos; other less obvious forms of deviant behaviour are not discussed) she maintains her position as the above. The role actions of sexual deviants are considered, by Dr. Chafetz, as representative of the typical role expectations of all males and females.

The balance of the book explores the ways in which various aspects of North American culture influence the perception of individual actions displayed by a member of either sex. Selective perception tends to reinforce sex roles when discordant behaviour is not noticed or labeled as deviant.

She concludes that due to the failure of the majority of men to become concerned and involved with the problem of culturally predesignated sex roles, it is up to the women to alter "the value premises underlying the sex role stereotypes" without involving themselves in a structure which merely reverses sex role traits.

Dr. Chafetz's work is well documented with her own and her students' research and is supplemented with the research of others working in the field of sex roles. (KP)

Henshel, A-M. Sex Structure. Toronto: Longman, 1973.

Henshel systematically examines sex differences from biological, psychological, and sociological perspectives. She accepts that there are biological differences more than most social scientists but maintains that those differences which have been documented are not enough to justify the social differentiation which is observable.

This book covers much of the same material that Oakley does with Canadian data as a base where appropriate. (LF)

Oakley, A. Sex, Gender and Society. London: Temple-Smith, 1972.

Oakley goes into great detail about the question of sex differences and their origins. She points out the necessity of growing attention to commonalities, even in studies which report differences, but she, too, lapses into a vocabulary which emphasizes differences. Two chapters are abstracted in detail.

### Chapter Five: Sex and Social Role

Traits: In this chapter the author discusses five specific functions in relation to women and their effect on social roles in various cultures. These characteristics are outlined as follows:

(1) the responsibilities of motherhood;

(2) strength and energy levels of women during pregnancy;

(3) strength and energy levels of women with respect to domestic work;

(4) the nature of women's occupations in pre-literate, small-scale societies;

(5) the physical strength and energy of the female in relation to the male.

Cultures: In all, Oakley mentions twenty-two cultures (this does not include the North American and European cultures, which are also mentioned). Five cultures; the Mbuti pygmies; the Bamenda in Africa, the Australian Aborigines, the Alor, and the Arapesh of New Guinea are looked at in more depth than the others. In many cases the remaining eighteen cultures are only mentioned briefly to further illustrate a point already made by Oakley in her discussion of one of the main five.

Results: (1) Among the Arapesh the job of child bearing and rearing is considered to belong to the mother and father equally. Both parents share the routine activities of child care, while at the same time performing other duties with respect to the economy of the village. The parent who has the least pressing duties at a certain time or day is the parent who cares for the children.

(2) The dangerous effect of heavy work before, during, and after pregnancy is generally put forward as the reason why women should not exert themselves physically beyond a certain point. This phenomenon does not occur in all cultures. Both the women of Alor and Bamenda work at their regular duties until the time of birth. After giving birth, they rest from 10 days to 3 weeks and then return to work.

(3) "Traditionally domestic work has required--and in unmechanised cultures continues to require--considerable physical stamina and ability...." For instance, in areas where the domestic water supply is located some distance from the home, the energy required to carry the water from the source to the home is equal to that required to cut down trees. Among the Bamenda, the women prepare the food in addition to a full day's work on the farm. Phyllis Kaberry timed the preparation of grain porridge and found that this process alone took approximately one hour per three pounds of grain. Consequently, it would seem that the idea that males do the "heavy" work and females the "light" work is something of a myth.

(4) The main work of women throughout history and across cultures has been seen as domestic, and therefore marginal as a contribution to the economic welfare of society, and yet the "traditional female role over wide areas of the world has involved women in economically productive work outside the home." For example, among the Australian Aborigines the food collected by the women is the staple food of the society and as a result, the family is economically dependent on the woman's work.

(5) "The difference in physical strength and energy between males and females is the reason for the division between them," but in reality the distinction between males and females in size and strength varies across cultures. In Bali, where males do very little heavy work, the males and females resemble each other in body, size, and shape.

(6) Since the difference in the reproductive systems of the male and female is the universal constant, societies tend to use this as the basis for allotting other tasks. But within each society, the actual pattern of male and female activities will be determined by the society's beliefs with regard to the reproductive functions of both sexes, and these beliefs are culturally determined.

Conclusions: An amazing amount of information was presented in a concise manner. The examples, on the whole, were short, detailed, and to the point. The author appears to have an extensive knowledge of the anthropological studies done in this area.

## Chapter Two: Sex and Personality

Traits: In this chapter the author has considered personality differences by sex with the weight of the discussion centering on aggression.

Cultures: Arapesh, Munudugumor, Tehambuli, Bamenda, Zuni Indians, S.W. Pacific Tribes, Bororo.

Results: (1) Definitions of male and female personality vary across cultures. Among the Arapesh the ideal adult has a nature which resembles the feminine stereotype in our culture, while among the Munudugumor the personalities of both sexes tend more toward the masculine stereotype of our culture.

(2) The definitions of male and female temperament vary from society to society and are associated with the definition of masculine and feminine tasks.

(3) A definite relationship between aggression and body size has been shown in various studies. The most aggressive boys are generally larger in size than their peers, and girls exceeding the "norm" for their sex in size and muscularity also exceed the female "norm" for aggressiveness.

(4) Culture plays an important part in the shaping of male and female personality, for while it is possible that biology may indicate the direction of the differences, it does not control the extent.

Conclusion: This chapter began as a cross-cultural discussion of sex and personality, but it very quickly turned into a dialogue on aggression as it is defined in North American and British societies, and the arguments put forward were based on the biology versus culture theme. (KP)

## BOOKS WHICH HIGHLIGHT BIOLOGICAL INFLUENCE ON SEX ROLES

Goldberg, S. The Inevitability of Patriarchy. New York: William Morrow, 1973.

"This work is a theory. A theory which for our purposes we may define as a systematic network of interconnected hypotheses that offer a general explanation of specific observations."

Steven Goldberg's basic theory is that "human biology precludes the possibility of a human social system whose authority system is not dominated by males and in which male aggression is not manifested in dominance and attainment of positions of status and power."

This theory is based, for the most part, on the production of the hormone testosterone in the male which gives him a greater capacity for aggression. Although Goldberg does admit that prior to adolescence males and females have roughly equal testosterone levels, he also claims that it would be dangerous to treat their aggression levels as equal since, during adolescence, the testosterone level in males increases (consequently increasing their level of aggression). As a direct result of this process, women would suddenly find themselves unequal to the male competition due to a hormone deficit and, having been raised in equality with males as children, they would not have the traditional feminine abilities to fall back on, consequently losing any source of power these abilities now give them. (Goldberg here seems to be assuming that to raise all children in equality means that all children would be raised as males.)

Goldberg does raise the subject of the occurrence of a higher testosterone level in some women, but he dismisses this as irrelevant, saying that "even if 10% of all women had higher testosterone levels than 10% of all men one would not be led to the conclusion that the parameters of hormone distribution by sex are irrelevant.... Exceptions are expected in situations where probability is the determinative factor."

Consequently, Goldberg believes that it is necessary for all males and females to be aware of their respective role expectations and display the appropriate role actions, since any other system "would make life intolerable for the vast majority of males, who would feel the tension between social expectation and the dearth of maternal feelings, and the vast majority of females, whose physiological feelings towards the infant would be frustrated." (KP)

Hutt, C. Males and Females. Harmondsworth, England: Penguin, 1972.

The author believes that some sex differences are of biological origin and her first two chapters deal with the chromosomes and hormones which affect these differences.

The next two chapters outline the biological processes which control these sex differences and the sex-typical patterns of behaviour as seen in humans and other mammals. In the latter, both sexual and non-sexual behaviour are discussed.

In a discussion of sexual anomolies, Dr. Hutt, after looking at the research done by J. Money and J.L. Hampson (1955, 1957) and J. Money and A.A. Anh (1968) with hermaphrodites, concludes that many of human beings' activities and interests are "at least partly a function of our early hormonal experience." This is not to say that Dr. Hutt feels that social influences are unimportant, but she does feel that they "act upon an organism that is already biased in a male or female direction."

The remainder of the book deals with the physical and behavioural differences as observed in preschool-aged children. Most of the information in this area is based on Dr. Hutt's own research.

The author found that males and females differ in intelligence (where the mean scores may be similar, the highest and lowest scores tend to be male, while the female scores will cluster around the overall average), perceptual abilities (females prove to be more sensitive than males), spatial ability (males tend to excel in this area), and verbal ability (females tend to be a great deal more aggressive than males, and although verbal aggression is more frequently observed in females than males, the difference is not significant).

In conclusion, the author believes that "sex differences do exist" as "an incontrovertible biological fact and whether such differences should result in differential treatment of males and females is a social decision." (KP)

## PATTERNS OF GENITAL DEVELOPMENT

Jost, A. "Becoming a Male." In Advances in Bioscience, Vol. 10, Schering Workshop on Contraception: The Masculine Gender, edited by G. Raspe and S. Bernhard. Oxford: Pergamon Press, 1973.

Purpose: The differentiation of the testes becomes a central issue in becoming a male. Results of animal species research showed that the testes impose biological maleness on a basic female "program" of the developing brain. The masculine pattern of pituitary function (non-cycling release of gonadotrophins) occurs at an early age due to the activity of testes and results from a masculinization of hypothalamic or other neural structures by testicular hormones. The working hypothesis of this research is that any gonad will become an ovary. Unless the basic female "program" is counteracted by the genetic material (Y chromosome), gonads develop as female gonads.

Comment: This study cites animal research, which is part of the experimental literature on fetal gonadal differentiation. The author provides a current bibliography on this animal research. The article deals with the primordial neural tissue and with embryological development and the development of primary and secondary sex characteristics in postnatal growth. (DDP)

Money, J.M., and Tucker, P. Sexual Signatures: On Being a Man or a Woman. Toronto: Little, Brown, 1975.

Purpose: The authors describe this book as a tool for individuals to discover more about the masculine and feminine components of their behaviour and the behaviour of others.[1]

This book was intended to offer a compassionate standard of comparison for reasonable human behaviour with regard to sex role standards. The authors use lay terms to explain prenatal effects of hormones on the brain and gonadal structures, and to discuss gender identity and gender role. Gender identity, as these authors see it, is the private experience of the gender role and involves one's own sense of individuality. Gender role is, in their view, a public expression of one's understanding of his or her gender identity. Developmental issues, such as childhood socialization of gender role behaviour, adolescent sexuality and gender role conflict, and the effect of early experience on adult sexuality are treated with a respect that the subjects deserve.

Abstractors' comments: More "scholarly" expositions of re-

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1. See note on p. 239.

search and theory on gender identity and role development have been cited elsewhere in this collection of abstracts. (DDR) This book is particularly geared to the lay person and, as with much of the work that Money and his associates have done, can be interpreted in several ways. The authors show that regardless of hormonal or gonadal limits, a child can be raised either sex. At puberty, hormones must be given if the sex of "raising" is different from hormonal sex specification. Those whose point of view emphasizes biological factors tend to focus on the adolescence period described in the book. Those whose point of view is the prominence of social influences emphasize the prehormonal interference necessary in adolescence to maintain contradictions of biological factors and social designation. (LAF)

Money, John. "Effects of Prenatal Androgenization and Deandrogenization on Behavior in Human Beings." In Frontiers in Neuroendocrinology, edited by W.F. Ganong and L. Martini, pp. 249-266. New York: Oxford University Press, 1973.

Purpose: This article reviews human syndromes in which children were subjected to prenatal androgen excess or in which other children were subjected to a prenatal absence of androgen. The effect of the presence or absence of androgen interacts with the genetic identity of the child. Male gonadal hormones, such as testosterone, are androgens. This abstract summarizes the effects of prenatal androgen excess on children who are genetically female. Further, the abstract includes comments on the effects of prenatal deandrogenization on children who are genetically male.

The general principle at hand is that androgen allows a fetus to differentiate in external morphology (the physical appearance of genitalia, build, distribution of muscles, etc.) as a male. The masculinization of external morphology by androgen can take place irrespective of the genetic or gonadal sexual identity of the individual. The author argues that normal female differentiation represents the product of non-androgenization, therefore there is no logic in presenting a syndrome called deandrogenization of the human female.

## SYNDROME SUMMARIES

### Prenatal Androgen Excess: Genetic Female

Sources: Two known sources of androgenization of a female fetus have been identified in which a genetic female fetus is masculinized. The first syndrome is a progestin-induced syndrome which occurs in response to the use of the synthetic drug progestin, in order to prevent a threatened miscarriage during pregnancy.

The second syndrome is the adrenogenital syndrome. This syndrome is the clinical manifestation of a genetic error which causes the adrenal cortices to release a hormone which has androgenizing properties instead of the appropriate hormone, cortisol. Under the influence of the excess androgen substance, external genitalia develop abnormally with an enlarged and protruding clitoris which resembles a miniscule penis. The internal genitalia differentiated at an earlier stage of embryological development and are unaffected by the adrenocortical androgen. However, the vagina opens internally near the neck of the bladder. Surgical repair is necessary to correct the appearance of the external genitalia. The crucial problem is the initiation of cortisone replacement therapy to normalize adrenal function.

Sex of Assignment: The majority of infants identified in this group are reared as girls with corrective surgery and hormone regulation in order to yield a "normal" female. A few babies had been identified as male and subjected to surgical and hormonal masculinization. When these two groups were compared, the "male" group had differentiated a masculine gender identity. This identity manifests itself in adolescence as masculine heterosexual romantic and erotic behaviour.

Females with the adrenogenital syndrome are able to menstruate, gestate, and lactate.

Gender Identity: Tomboyism: Prenatal androgenization, which results in androgenized females, appears in behaviours which take the form of vigourous physical expenditure and disinterest in rehearsing maternal behaviours with dolls. These girls are characterized by a willingness to defend themselves, but are not noticeably aggressive. They manifest normal heterosexual interest and activity in adolescence and do not tend to be lesbian or bisexual in their erotic behaviour or love affairs.

Intelligence: The author reports unconfirmed evidence that prenatal androgenization of either a genetically male or a genetically female fetus enhances intelligence.

Abstractor's comment: Prenatal androgen exposure does not appear to influence the intelligence or differential abilities of children. The androgenital syndrome children have IQs which are consistent with those shown by other family members. Please see: Baker, S.W., and Ehrhardt, A.A. "Prenatal Androgen, Intelligence, and Cognitive Sex Differences." In Sex Differences in Behaviour, edited by R.C. Friedman, R.M. Richart, R.L. VandeWiele, and L.O. Stern. Toronto: John Wiley, 1974. (DDR)

## Prenatal Androgen Excess: Genetic Male

Syndrome: The best available information on long-term behavioural effects of prenatal androgenization of the human genetic male derives from boys with the androgenital syndrome. Cortisol treatment provides adequate corrective therapy and adrenogenital males do not appear to differ behaviourally or psychosexually from normal age-matched males.

Because of the precocious onset of masculinizing puberty, the boys attain a large masculinized body and are sexually mature at an early age. However, their bone growth shows premature epiphyseal closure and their growth stops when they reach a height of about five feet.

Sex of Assignment: There is no genital ambiguity apparent at birth. Excess androgen fits with the child's socialization as a male.

Abstractor's comment: The effect of this syndrome on adolescent and adult male aggressive behaviour has not been fully investigated. Other experimenters cited in this selective bibliography have shown that high levels of circulating testosterone were associated with a more "masculine" body type, and emphasis on physical strength and higher incidence of aggressive behaviour. Further, the XYY genetic syndrome, which has been found to be present in increased numbers of men imprisoned for violent crimes, is not correlated with heightened testosterone levels. (DDR)

Additionally, Money reports a marked tendency towards gentleness among boys and young men who suffer from the adrenogenital syndrome.

Gender Identity: Boyism: The fetal androgenization of the male child results in an "all boy" child. The precocious sexuality of these boys still results in a heterosexual or bisexual sexual preference. They are not sexually aggressive and do not impose themselves on unwilling partners. They are not physically assertive and may avoid asserting dominant behaviour when challenged by other young boys.

Intelligence: There is an enhancing effect of the adrenogenital syndrome on the intelligence of the adrenogenital male. It is not conclusive whether males or females receive a greater intellectual benefit from this form of fetal androgenization.

### Prenatal Deandrogenization: Genetic Male

Syndromes: Three conditions lead to a prenatal deandrogenization of the human genetic male, resulting in a vital infant. These conditions include a 17 a-hydroxylase deficiency resulting in blockage of adrenocortical and gonadal steroid hormone synthesis; gonadotrophic deficiency (a pituitary disorder resulting in a failure to simulate the gonadal target organ the testes, to secrete the androgen substances); and target-organ (testicular) insensitivity to androgens at a cellular level.

The most prevalent syndrome involves the so-called testicular feminizing or androgen-insensitivity syndrome. This syndrome is genetically transmitted through the maternal line. The testes of affected males function normally at puberty in that they secrete amounts of androgen and estrogen normal for a male. These males are infertile, however. Cellular insensitivity to androgen has the same effect as a total absence of androgen. As a fetus, female external genitalia or hermaphroditic genitalia appear and at adolescence, feminine secondary sexual characteristics appear. Menstruation does not occur.

Therapy: Feminized males do not need supportive estrogen replacement unless gonadal surgery is required to relieve the risk of malignancy. There is no effective hormonal therapy for androgen-insensitive children who are socialized as males.

Sex of Assignment: In the case of this syndrome, deandrogenized genetic male infants are assigned as females at birth. There is no clinical evidence that sexual cycling occurs in deandrogenized males.

Gender Identity: Gender identity differentiation is concordant with the sex assignment at birth. In adults, the erotic functioning of the androgen-insensitive male reveals no experience of wet dreams and little or no effect of stimulation by spontaneous erotic imagery. There is less erotic initiative than in normal males, and androgen-insensitive males experience multiple orgasm, as females do.

Intelligence: The deandrogenization of the fetal male is an exceptionally rare condition. The intelligence of affected individuals falls well within the normal range. Interestingly, the IQ shows the same bias in favour of verbal fluency. The results obtained by Money seem to indicate that this discrepancy in IQ is not genetically determined but it is unclear whether its origin lies in prenatal androgenization or in the postnatal events in socialization of these children as females. (DDR)

Abstractor's comment: Please note that these syndromes underscore the fact that there are three crucial processes in the differentiation of sexual identity. First, prenatal sexual differentiation of the brain and peripheral sex structures must occur normally. Secondly, postnatal assignment of sexual identity predicates the third process, the socialization of the child. Proper socialization is the crucial factor in the adequate adjustment of children who suffer from congenital hormonal irregularities. Parents and physicians must be particularly careful in the socialization of these children to discourage sex role stereotypes and broaden the acceptable range of emotional and social behaviour available to them. It may also be that the enhancement of intelligence observed in the adrenogenital syndrome results in a lower demand for sex role stereotyped response in these children. The relationship between IQ, social class, and heterogenity of behaviour has been documented by Constantinople (1974) and others.

As a further point for discussion, prenatal androgen may be seen as one of the factors contributing to the development of temperamental differences within and between sexes. Please see: Ehrhardt, A.A., and Baker, S.W. "Fetal Androgens, Human Nervous System Differentiation, and Behaviour Sex Differences." In Sex Differences in Behaviour, edited by R.C. Friedman, R.M. Richart, R.L. VandeWiele, and L.O. Stern. Toronto: John Wiley, 1974. (DDR)

This extensive summary of Money's research illustrates some important points:

(1) Genetic maleness or femaleness is subject to gonadal endrocine modification during the prenatal development.

(2) The differentiation of human males requires the testicular overriding of the so-called "female" pattern of the developing nervous system.

(3) Biological mechanisms for the expression of male biological functions appear to require the inhibition or suppression of underlining female biological activity. This biological imperative may presage a cultural tradition of the suppression of "feminine" behaviour and the identification of masculine traits in terms of their opposition to feminine traits or in terms of the mutual exclusion of "masculine" and "feminine" attributes in the same individual. (DDR)

## PATTERNS OF HORMONAL LEVEL DEVELOPMENT

Gupta, D., Altanasio, A., and Laaf, S. "Plasma Estrogen and Androgen Concentrations in Children During Adolescence." The Journal of Clinical Endrocrinology and Metabolism. 40 (1975): 636-643.

Purpose: To explore the mechanisms which initiate the hormonal changes responsible for puberty. In this longitudinal study, the relationship between four steroid hormones (estradiol, estrone, testosterone, dihydrotestosterone) during growth and sexual maturation in children.

Subjects: Forty-four boys and 43 girls participated in this study. They had been hospitalized but without any overt signs of an endrocine disorder. The sexual maturity of each child was rated according to the presence of secondary sex characteristics like genital size (boys) and breast development (girls).

Procedure: Chromatographic and radioimmunological technique was used on blood samples obtained from each child. Blood levels of estrone, estradiol, testosterone, and dihydrotestosterone were recorded. Blood levels were assayed as children progressed through each of the five stages of pubertal development.

Results: The mean concentration of estrone rose for both sexes during puberty, although a greater increment was noted for girls. The mean concentration of estradiol increased for girls only. Testosterone secretion increases during stage three in boys only. Levels of dihydrotestosterone showed a marked increment throughout the five pubertal stages, although no surge of activity occurred such as that observed with testosterone.

Plasma estrogen levels in females correlated better with the presence of clinically observed secondary sex characteristics, which indicated endocrine maturity, than they correlated with chronological age. Also, boys showed a better correlation between androgen levels and maturitional stages than with chronological stages. (DDR)

Abstractor's comment: The significant changes in brain and body chemistry may set the stage for the successful movement of children from concrete operations into more sophisticated abstraction which characterizes the Piagetian stage of formal operations. Little comment appears in the psychological literature which relates the experience of this aspect of sexual maturity to an enhancement of cognitive ability in male and/or female adolescents. It is an area ripe for further study. (DDR)

## CEREBRAL ELECTRICAL ACTIVITY

Matousek, M., and Petersen, I. "Frequency Analysis of the EEG in Normal Children and Adolescents." In *Automation of Clinical Electroencephalography*, edited by P. Kellaway and I. Petersen. New York: Raven Press, 1973.

Purpose: An analysis of the frequency components of the normal child and adolescent electroencephalogram (EEG) was undertaken.

Subjects: EEG records were obtained from 401 children (218 girls and 183 boys) and from 160 adolescents (85 females and 75 males). Subjects were included after careful screening to ascertain normal processes of gestation, of birth, of neurological activity, and of growth.

Method: EEG recordings were obtained using seven pairs of recording electrodes placed in frontal, temporal, parietal, and occipital locations. The frequency analysis of the EEG was accomplished via computer reduction. The frequency bandwidths into which the EEG was divided included delta (1.5-3.5 Hz), theta (3.5-7.5 Hz), alpha 1 (7.5-9.5), alpha 2 (9.5-12.5 Hz), beta 1 (12.5-17.5) and beta 2 (17.5-25 Hz).

Abstractor's comment: Individuals interested in the specific recording technique and data analysis should consult this methodology directly. (DDR)

Results: Both age and sex differences appeared in the EEG results. Age was shown to significantly affect the slower frequencies of the delta (1.5-3.5 Hz), theta (3.5-7.5) and alpha 2 (9.5-12.5) bandwidths (see Discussion section). The most pronounced sex difference involved EEG differences observed in adolescent girls. A significantly higher quantity of faster activity as beta 1 (12.5-17.5 Hz) and beta 2 (17.5-25 Hz) was noted in the EEG. Additionally, the slowest delta (1.5-3.5 Hz) was noted in the EEG. Additionally, the slowest delta

(1.5-3.5 Hz) activity appeared to decrease.

Discussion

Age Differences: The authors note that the proportional frequency in alpha 2 and beta 1 bandwidths increases with age. Between 16 and 21 years, age dependent changes in EEG begin to slow down. The authors' mathematical observations of brain electrical activity indicate that EEG parameters show a logarithmic rather than a linear dependency on age. The increased variability and amplitude differences in EEG signals observed at each recording site could be interpreted as the EEG correlates of successive functional differentiation of various brain areas during maturation. Maturation occurs more slowly at frontal and central areas and more rapidly in posterior parts.

Sex Differences: Significant sex differences in EEG activity appeared only in the adolescent sample. In many female subjects, the quantity of beta activity was higher than that shown in male subjects. The authors attribute these differences to the onset of menstruation and to the increased anxiety over the recording procedure which appeared to have occurred only in female adolescent subjects. The authors concluded that the emotional state of the subject may contribute to the sex differences among EEG frequency patterns. (DDR)

Abstractors' comments: Please note the possible relationship between EEG frequency changes by age and sex and the possible impact of skull and brain growth processes as they may affect EEG recording and interpretation of EEG changes during maturation. (DDR) Not enough information on the proportions of males and females getting different measures was provided to do a sensitive reading of similarities and differences. (LAF)

## AROUSAL MECHANISMS IN INFANCY

McGuinness, D. "Sex Differences in the Organization of Perception and Cognition." Department of Psychology, Hatfield Polytechnic, Box 109, Hatfield, Herts, 1974.

Purpose: This article begins with a review of relevant literature on sex differences. A second section is presented on interpretation and conclusions of the scientific evidence. The review utilizes data to resolve the issue of whether sex differences in perception and cognition in behaviour are culturally or biologically determined. The second problem relates to the way in which biological differences may operate to bias perceptual or cognitive functioning. Further, to what extent does the biasing of perceptual and cognitive functioning receive encouragement or discouragement from the social environment?

Method: The author utilizes an inductive approach in reviewing literature on four important aspects of perceptual and cognitive ability: (1) response characteristics; (2) sensory capacity; (3) attention; and (4) cognitive ability. (DDR)

Conclusions: Mothers are more likely to respond to male vocalizations. Nevertheless, female infants are more likely to respond to maternal stimuli, while males are more likely to freely vocalize. (LAF)

Abstractor's comment: Differences noted in the literature were summarized by McGuinness, so no opportunity existed to examine the degree of overlap of patterns. (LAF)

Zelazo, P.R., Kagan, J., and Hartman, R. "Excitement and Boredom as Determinants of Vocalization in Infants." The Journal of Genetic Psychology. 126 (1975): 107-117.

Purpose: Previous literature cited in this study has indicated that female babies respond by vocalizing when stimulated with a variety of objects. This vocalization was considered to be the emotional concomitant of visual mastery. This study sought to apply principles of discrepancy theory to infant vocalization.

Method: Subjects were 72 male and 72 female infants aged 9-1/2 and 11-1/2 months. Twelve male and female infants were assigned to each of three stimulus conditions at both age levels. Vocalizations and other behaviours were noted in response to the movement of a stimulus object (an orange cube) in a variety of stimulus conditions. Dependent measures included in the trial vocalization, stimulus period vocalization, and fixation time on the stimulus object.

Results: Repetition of stimuli, moderate discrepancy of stimuli, and novelty of stimuli elicited different patterns of vocalization. 11-1/2-month-old boys and 9-1/2-month-old girls vocalized more with the repetition of familiar stimuli. 11-1/2-month-old girls vocalized more in response to moderately discrepant stimuli The experimenters note that this research supports earlier findings that suggest that females vocalize in response to stimuli. However, no claim is made for this observation as a universal sex difference. Further research is required to establish any maturational or child-rearing practices which may influence this behaviour. (DDR)

## SENSORY PROCESSING

Fisher, L., and Rubenstein, G. "Developmental Aspects of Auditory and Visual Scanning." Perceptual and Motor Skills. 40 (1974): 583-586.

Purpose: A three-fold objective for this research was described by the authors: (1) to study the developmental scanning abilities of children to determine whether growth is a linear function or whether certain peak periods of growth can be observed; (2) to investigate the relationship of auditory and visual scanning in individual children and to determine the pattern of development of these abilities; and (3) to study the relationship of auditory and visual scanning to academic achievement.

Subject: Sixty subjects, 5 females and 5 males per grade, from Grades 1 through 6, from a middle-class school.

Method: Two test sessions of twenty minutes duration were conducted. Visual and auditory scanning problems were conducted using modality specific targets and distractors. Measures included visual scanning accuracy, auditory scanning accuracy, and reaction time.

Results: The interaction between grade and sex was analyzed by an analysis of variance. This analysis yielded no significant sex differences. Grade yielded significant effects on interactions with all performance measures.

An important developmental feature of visual and auditory scanning skill appeared. Visual scanning ability appears to develop gradually, whereas auditory scanning appears to develop with particular spurts between Grades 2 and 3 and Grades 4 and 5. Further, visual and auditory scanning are relatively unrelated in the early grades and the relationship appears to increase as the child reaches the upper elementary grades.

Comment: The authors note that auditory-scanning ability correlates highly with reading and arithmetic achievement. This study stresses the need to further explore the relationship of auditory scanning to achievement. The experimenters note that auditory information processing is highly correlated to learning difficulty. (DDR)

Ford, M.A., Stern, D.N., and Dillon, D.J. "Performance of Children Ages 3 to 5 on the Draw a Person Task: Sex Differences." Perceptual and Motor Skills. 38 (1974): 1188.

Purpose: To assess the performance of boys and girls of 3-5 years of age on the draw-a-person task.

Subjects: Fifty-eight middle-class children (29 male and 29 female children).

Method: Children were asked to "draw a picture of a person" by their nursery-school teacher. Drawings were scored according to procedures cited by the authors.

Results: An analysis of variance yielded both significant age and sex components. More than boys, girls at all ages scored higher in detailing and body-concept development. More girls than boys at all ages drew more detail in dress, etc., which differentiated the body by sex.

Discussion: Girls, even at this stage of development, appear to make recognizable drawings and represent better the body and self through their drawing, and continue to do so. The basis for the attribution of such maturity to girls is not clear. The authors hypothesize the presence of more developed mental representations, better developed fine motor ability, or greater experience with materials, etc.

Abstractor's comment: The development of perceptual processes in female children and early socialization of females by adults may contribute heavily to their superior performance on a test which is so sensitive to these learned skills. (DDR)

Harris, L.J. "Interaction of Experiential and Neurological Factors in the Patterning of Human Abilities: The Question of Sex Differences in 'Right Hemisphere' Skills." Expanded version of paper prepared for a symposium on "Functional Specialization of the Cerebral Hemispheres in Infants and Children: New Experimental and Clinical Evidence." Biennial Meetings of the Society for Research in Child Development, April 13, 1975, Denver, Colorado.

Purpose: To document sex differences in the organization and function of the cortex of the right hemisphere of the brain, which may account for observed male superiority in spatial ability.

Discussion: One of the most persistent individual differences in cognitive ability involves the sex differences in spatial ability. Males, as a group, have excelled in the following behaviour tests of spatial ability:

(1) recall and detection of shape as shown by embedded figures tests;

(2) certain visual coding tasks;

(3) mental rotation and identification tasks;

(4) geometric problems, especially solid geometry;

(5) cube-painting and cube-cutting puzzles;

(6) sense of direction, visual and tactual maze learning;

(7) map-reading;

(8) left-right discrimination;

(9) a rod and frame test (which tests one's ability to judge figure/ground relations)

(10) certain types of logical conservation which have strong visual/spatial components.

Several models of the neurophysiological basis for sex differences in language and spatial ability have been proposed in larger reviews by this author.

Abstractor's comment: These reviews are currently in press. Both reviews will be of interest to the serious student of individual differences. The reviews are:

Harris, L.J. "Sex Differences in Spatial Ability: Possible Environmental, Genetic, and Neurological Factors." In Hemispheric Asymmetries of Function, edited by M. Kinsebourne. Cambridge: at the University Press (in press).

**Harris, L.J.** "Sex Differences in the Growth and Use of Language." in *Women: a Psychological Perspective*, edited by F. Donelson and J. Gullaborn. New York: John Wiley (in press). (DDR)

A Working Model of Sex Differences in Spatial Ability: The lateralization of differential abilities in each cerebral hemisphere has been well documented. In its simplest form, cerebral lateralization of function means that most language skills depend on the integrity of the left cerebral hemisphere. Spatial abilities depend on the normal functioning of the right cerebral hemisphere. Harris has extended this argument of cerebral specialization to include an explanation for sex differences in spatial ability. In his model, the male brain is more successfully lateralized with language function restricted to left hemisphere and spatial functions represented in the right hemisphere. Females should be expected to have functions more bilaterally represented in both hemispheres, and this distribution of language abilities results in a decrement in spatial activity.

Harris points to a crucial problem--why should bilateral language function disrupt spatial ability? Also, what is the nature of the difference between left and right hemispheric functions, and how are the hemispheres uniquely suited for their roles in mediating "lateralized" language or spatial ability?

Harris provides evidence that each hemisphere subserves certain elementary functions which underlie the more complex activities of language and spatial ability. Speech functions may depend on the convergence of similar elements, such as muscular movements and coordinations of the speech apparatus, for speech production and these activities focus in the left hemisphere. Spatial functions may depend on dissimilar information or "unlike elements" from visual, kinesthetic (motor), and vestibular (balance) inputs, plus memory which form the single abstraction, which is experienced as a spatial reference. Further, Harris suggests that two distinct coding processes appear, which are each specific to a particular hemisphere. The left hemisphere operates in a more logical, analytic fashion, extracting information in a sequential manner to which a verbal label may be attached. The right hemisphere function may be described as synthetic. The right hemisphere functions to organize and process information in terms of Gestalts or wholes. Lateralization of function is attributed to the basic incompatibility of language and spatial operations. Lateralization serves the function of providing separate locations for two information-coding operations. The fact remains that both capacities are present in all people.

Abstractor's comment: There can be a joint maximization of ability in the majority of individuals, so that each individual processes language skills and spatial abilities intended to promote competence under conditions of a variety of environmental or intellectual demands. (DDR)

The potency of neural representation of language processes in the postnatal development of individuals needs to be clearly understood. The hypothesis about lateralization implies that, for certain individuals, language ability is represented in both the left and right hemispheres. When language abilities occupy the right hemisphere, a corresponding loss of spatial skills is to be expected.

Sex Differences in Lateralization: Two questions need to be explored. First, are females less lateralized than males? Secondly, do more women appear among those for whom the verbal abilities predominate? Harris cites anatomical differences which are structural asymmetries in the neural pathways of the cerebral hemispheres. These asymmetries appear to be unequal in consistency for males and females. Areas of the right temporal planum are larger in some adult brains. Women form a high proportion of people with this prominent structure in the organization of the right cortex. This enlargement of posterior regions in females implies a reduced size of regions available for spatial processing. Harris implies that size is related to potential ability. The right hemisphere language area has been described as a "reserve" area for speech ability. As further evidence, females are less impaired by surgical removal of the left temporal lobe. The usual explanation offered is that females utilize the available right temporal "reserve" speech area for language activity. Men do not utilize an analogous area for language activity. In addition, evidence of EEG and perceptual processing differences were cited which supported the argument that spatial abilities may be more unilaterally represented in men than in women.

An alternative explanation of the left hemisphere-verbally superior female performance can be found in the concept of preferred mode of thought. Females solve spatial problems with the less efficient verbal mode. This mode of coding spatial and other relations stems from the early predisposition of girls to articulate and comprehend speech parts and grammatical rules. Research has shown that early speech behaviour correlates well with the subsequent general intelligence of female, but not male, children.

Possible Effects of Gonadal Steroid Hormones on Brain Specialization and Nervous System Activity: Harris speculates that spatial ability and proficiency on spatial tasks is linked to the production of testosterone. The evidence from humans has caused Harris to suggest a complex relationship between steroid hormones and spatial ability. Harris summarizes the research of others to conclude that spatial ability requires the presence of a minimum effective quantity of androgen. Cognitive contrast and gonadal steroids bear a curvilinear relationship. Intermediate levels of an androgen/estrogen ratio are conducive to spatial abilities. Both males and females who are good at visual/spatial tasks will be less sexually differentiated than more verbally-fluent, well-differentiated members of either sex.

Abstractors' comments: This article is highly speculative, but represents a synthesis of attitudes and experimental results which is at the forefront of experimental research on sex differences in brain processes and perception. Research on brain processes and perception will promote a wider understanding of learning patterns and developmental stages, during which learning may best proceed. (DDR) The net effect of the approach of this article is to emphasize sex differences without making clear what the consequences were for those who did not fit the modal patterns being described. (LAF)

McGuinness, D. "Sex differences in the Organization of Perception and Cognition." Department of Psychology, Hatfield Polytechnic, Box 109, Hatfield, Herts, 1974.

Purpose: See abstract on p. 283.

Method: See p. 283.

Conclusions: Females are more likely than males to be able to distinguish between intensities of sound. More males than females can distinguish between visual intensities involving objects (as opposed to people). (LAF)

Abstractor's comment: Differences noted in the literature were summarized by McGuinness, so no opportunity existed to examine the degree of overlap of patterns. (LAF)

Vaught, G.M., Pittman, M.D., and Rocdin, P.A. "Haptic-visual Form Identification in Children Aged 4 through 13." Perceptual and Motor Skills. 40 (1975): 305-306.

Purpose: To examine the capacity of children to make haptic (touch) to visual intersensory judgements. Further, it was necessary to examine possible sex differences in the development of this ability.

Subjects: One hundred male and 100 female (children of each sex in each age group from 4 to 13) participated in the study.

Method: Children felt a form board and then were asked to visually identify the form at a later date.

Results: No sex differences were found for any age group, in the number of correct identifications of haptic to visual form identification. Intersensory equivalence abilities are age-related and the abilities reach their maximum at about nine years of age for both sexes. (DDR)

## MOTOR ABILITIES

Kopp, C.B. "Fine Motor Abilities of Infants." Developmental Medicine and Child Neurology.

16 (1974): 629-636.

Purpose: To investigate whether infants, classified on the basis of coordinated or clumsy movements, differ in the use of sensory-motor schema (eye-limb coordination) in examining objects.

Subjects: The final sample consisted of 26 full-term infants (10 males, 16 females) and 10 pre-term infants (6 males, 4 females). Infants were classified on the basis of coordinated fine-motor adjustments in examining a red cube. Infants were tested at 8 months of age.

Method: The duration and frequency of identifiable behaviours were noted for comparison. The observed behaviours were exploration; large action (waving or banging with object); simple actions (sliding object on table); looking at object without touching; looking at object while holding; looking around room with object in hand.

Results: Duration of Patterns of Fine Motor Coordination (Schema): A trend was obtained for overall group differences between clumsy and coordinated infants in the amount of time spent in all 6 behaviours. Significant differences appeared between groups in the frequency of exhibited behaviours. The coordinated group showed significantly more exploring, while the clumsy group showed a trend towards more large actions or simple action behaviour. The most common form of exploratory behaviour was mouthing of objects. No sex differences were observed in fine-motor coordination.

Discussion: The quality of fine-motor behaviour influences the way normal 8-month-old infants use objects. At this age, all object interactions provide stimuli for information processing and learning. The author suggests that the most important developmental issue involves the infant's preferred style of fine-motor coordination. This preferred mode should not distract the infant from attending to relevant events occurring in his environment.

Results: No sex differences in fine-motor coordination appear. (DDR)

Abstractors' comments: This information should be included in evaluating behaviour during the Piagetian sensory-motor phase. (DDR) With such a small sample it would have been difficult to get a statistically significant difference. (LAF)

Rarick, G.L., and Dobbins, D.A. "A Motor Performance Typology of Boys and Girls in the Age Range 6 to 10 Years." *Journal of Motor Behavior* 7 (1975): 37-43.

Purpose: This study was designed to utilize an approach which examines behavioural differences in humans via a methodology which identifies clusters of individuals who show similarity in a number of specified traits. The focus of investigation was the construction and description of a motor performance typology of a group of young boys and girls. The typology is based on four basic components, derived from a factor analysis of 47 tests of fine and gross motor performance.

Subjects: Seventy-one boys and 74 girls in the age range of 6.0 to 9.9 years.

Method: The present study emphasizes four main factors of motor performance: (1) strength-power-body size, (2) gross body coordination, (3) fine motor skills, and (4) balance. A series of observations and test results in each category was obtained.

Results: Eleven distinct performance groupings appeared. It was noted that of the typologies obtained in this study, few children were good in all aspects of motor coordination.

Further, the five typologies which accounted for the majority of the girls (73%) included fewer boys (16%). The six categories which accounted for most of the boys (84%) only accounted for the motor behaviour of one-quarter of the girls (27%).

Table 1

NUMBER OF PERCENTAGE OF BOYS AND GIRLS GROUPED ACCORDING TO PERSON-CLUSTER

| Person-Cluster | Males | | Females | | Total |
|---|---|---|---|---|---|
| | No. | Percent | No. | Percent | |
| 1 | 6 | 8.9 | 3 | 4.3 | 6.5 |
| 2 | 8 | 11.9 | 2 | 2.8 | 7.4 |
| 3 | 2 | 2.9 | 13 | 18.6 | 10.9 |
| 4 | 1 | 1.5 | 9 | 12.9 | 7.4 |
| 5 | 7 | 10.4 | 3 | 4.3 | 7.4 |
| 6 | 5 | 7.5 | 11 | 15.7 | 11.6 |
| 7 | 9 | 13.4 | 0 | 0.0 | 6.5 |
| 8 | 1 | 1.5 | 12 | 17.1 | 9.4 |
| 9 | 14 | 20.9 | 6 | 8.6 | 14.5 |
| 10 | 2 | 2.9 | 6 | 8.6 | 5.8 |
| 11 | 12 | 17.9 | 5 | 7.1 | 12.4 |

Abstractors' comments: It should be noted that these observations on typologies of motor behaviour make no comment about the superiority of any set of behaviours. The abilities of the children appear to overlap. The behavioural significance or practical utility of these typologies for education or behavioural analysis is not clear. (DDR) The utility of this approach in getting away from a potentially crippling dichotomy of behaviours and abilities is discussed in the essay. (LAF)

Zaichkowsky, L.D. "The Development of Perceptual Motor Sequencing Ability." Journal of Motor Behavior. 6 (1974): 255-261.

Purpose: The author describes a four-fold purpose: (1) to investigate the way in which short-term memory may be a limiting factor in the development of perceptual motor sequencing ability; (2) to determine whether sex differences exist in sequencing ability; (3) to determine whether organized information facilitates serial recall; and (4) to discover whether the recall of perceptual-motor responses results in the serial position curve found using other response options as cited in supporting literature.

Subjects: Children from three age groups--5 years, 7 years, and 9 years--participated in this study. In each age group, 20 girls and 20 boys were tested.

Method: A Serial Perceptual-Motor Discriminator (SPMD) was designed for testing children. A stimulus display and a set of response manipulanda comprised the SPMD. Children were trained to respond to a series of light stimuli which were cued to order of response to be made with left arm, right arm, left leg, and right leg. The experimenter monitored the subjects' responses via teletype terminal, and data was recorded via analog computer.

Results: Both age and the age by type of organization of sequencing provided for significant differences in motor performances. No sex differences were found in errors in sequencing or in errors at each serial position. The author notes that males scored better than females on four of sex times age task categories.

Discussion: This experiment supports previous data which have found that sequencing ability improves with age. The greatest gains in performance in this study appeared to take place between 5-7 years of age. No sex differences were obtained. The large variability existed in the individual performance between subjects within each sex. Also, this study indicated that organized sequences are recalled better than information that is not organized in some distinct manner.

As regards a test of sequential ability and short-term memory, older children appear to use verbal skills which provide more effective mediators for memory. Results indicated to the author that older children may use different learning strategies. (DDR)

Abstractor's comment: It may be useful to explore this task in terms of its cognitive complexity, and to relate the task to the appropriate Piagetian stage of operations. (DDR)

## PERCEPTION AND COGNITION

Guttentag, M. "Cognitive Functioning in Parallel and Sequential Processing Conditions." The Journal of Genetic Psychology. 122 (1973): 127-133.

Purpose: To test three hypotheses about the impact of sex differences on cognitive functioning. The hypotheses are:

(1) Men will show greater efficiency than women with a problem that requires the application of a rule held through successive operations (sequential processing).

(2) Women will be more efficient when operating with multiple search rules in a visual search problem (parallel processing) than during serial processing.

(3) There will be an interaction between sex of the subject, problem type, and the presence of irrelevant material in the same sensory modality.

Subjects: One hundred and twenty men and 120 women between 20 and 35 years of age, randomly selected from a non-college population.

Method: Subjects were shown stimulus material by means of a tachistoscope. Five experimental conditions were presented:

(1) Parallel Processing: Subjects were given multiple search rules. For example, search for A, F, K, V, or 9. Find an animal name, find a woman's first name and find a three-digit number which is a multiple of 7.

(2) Sequential Processing: Subjects were given a single search rule to apply in sequential order. For example, find a two-digit number which is a multiple of 5. Add it to the next two-digit number which is a multiple of 5. Add the result to the next two-digit number that is a multiple of 5.

(3) Distraction Condition: Distracting white noise was introduced on 1/3 of the parallel and 1/3 of the sequential processing trials.

(4) Similar Cues Condition: The visual context was varied to make detection of the cues more difficult.

(5) Control Conditions: One-third sequential and 1/3 parallel processing trials were run without any distraction or interference.

Results and Discussion: Hypothesis 1 was supported, as men were more efficient than women in sequential processing under all types of distraction. They were also more efficient under parallel processing conditions as well.

Hypothesis 2 was confirmed as women were, in fact, more efficient during parallel processing. However, male performance also improved over that shown in sequential processing.

Hypothesis 3 was not supported as the type of distraction did not interact with either sex or processing condition to provide a significant three-way interaction.

The data suggest that male performance, regardless of processing condition, deteriorated less than female performance with the introduction of irrelevant cues. This experiment demonstrates that it is also possible to structure information-processing tasks so that sex differences are highlighted rather than obscured.

Abstractor's comment: Please note that this experiment involved a non-college, adult sample. Sex differences in mature cognitive style may result from the cultural bias of socialization to a male norm of performance or from the use of psychometric tools or processing tasks which favour male performance. Broverman et al. and McGuinness (cited in this bibliography) offer a more detailed review of sex differences, and their role in, or their impact on, cognitive style. (DDR)

McGuinness, D. "Sex Differences in the Organization of Perception and Cognition." Department of Psychology, Hatfield Polytechnic, Box 109, Hatfield, Herts, 1974.

Purpose: See abstract on p. 283.

Method: See p. 283.

Conclusions: Infant, child, and adult skills of females and males are seen to be different by this author. Verbal abilities are said to be more prevalent in girls than boys, from mid-childhood on. An interest in people and social skills seems to correspond. An ability and interest revolving around auditory and music skills is also found in girls more than boys. Skills that revolve around visuo-spatial abilities tend to be found in boys more than girls from mid-childhood. Mathematical abilities, especially geometry, develop a bit late and are thought to be an outgrowth of visuo-spatial proclivities. Boys are also seen more often as impulsive and curious--characteristics which lead to more exploratory behaviour. (DDR)

Abstractors' comments: This material takes exception to theoretical positions on sex differences in analytic thought processes, provided by Witkin et al. (Witkin, H.A., Dyk, R.B., Faterson, H.F., Goodenough, D.R., and Karp, S.A. Psychological Differentiation. New York: John Wiley, 1962), Broverman et al. (Broverman, D.M., Klaiber, E.L., Kobayashi, Y., and Vogel, W. "Roles of Activation and Inhibition in Sex Differences in Cognitive Abilities." Psychological Review, 75, 1968, 23-50); and Silverman (Silverman, J. "Attentional Styles and the Study of Sex Differences." In Attention: Contemporary Theory and Analysis, edited by D.I. Mostofsky. New York: Appleton-Century Crofts, 1970). (DDR) McGuinness accepts sex differences as a useful way to organize the world and gives little attention to those who do not fit the modal patterns that she has worked out. There is no way to assess the extent to which her patterns prevail in the real world from her verbal generalizations. (LAF)

## HORMONES AND COGNITION

Broverman, D.M., Klaiber, E.L., Kobayashi, Y., and Vogel, W. "Roles of Activation and Inhibition in Sex Differences in

Cognitive Ability." Psychological Review. 75 (1968): 23-50.

Purpose: This review develops the hypothesis that sex differences in cognitive abilities reflect sex differences in physiology. This argument is necessary for several reasons:

(1) A biological framework must be constructed, wherein one may conceptualize normal, human, individual differences in certain mental abilities.

(2) A biological basis of behaviour must be understood, as sex differences in cognitive ability cannot be accounted for solely on the basis of learning or environmental factors.

(3) The specific hypothesis is offered that adrenergic (activating) and cholinergic (inhibitory) processes are sensitive to gonadal steroid hormones (estrogens and androgens) and that these hormones' effects have an impact on cognitive abilities for each sex.

(4) This concept of sex differences has serious implications for traditional correlative or factor analytic approaches to the assessment of cognitive organization.

Abstractor's comment: The concept of homogeneity of variance and the parceling of variance in factor analysis may be invalid if male and female behaviour occurs from discontinuous distributions. (DDR)

(5) This paper advocates the view that the relationships involved in cognitive organization cannot be properly understood without assessment of the changes in individuals which are a function of pertinent organismic variables, such as hormone levels.

The attributes of behaviour in which males and females are superior were summarized by the authors. Females excel in behaviours based on past experience of learning, as opposed to problem solving of novel or difficult tasks, such as colour naming, talking, and reading. Secondly, the behaviours are well automatized and appear to involve minimal mediation of the behaviour by higher cognitive processes. These behaviours involve fine motor coordination rather than coordination of large motor movements, such as those which appear in athletic exercise. The behaviours are also evaluated in terms of the speed and accuracy of repetitive responses.

Males excel at behaviours involving an inhibition or delay of initial response tendencies to obvious stimulus attributes (as in embedded figures). The authors characterize these behaviours as involving extensive mediation by higher cortical processes. Finally, these behaviours are evaluated on the basis of solutions developed in response to novel tasks or situations.

The authors provide a cogent review of adrenergic (excitatory) mediation and cholinergic (inhibitory) mediation of behaviour. The activity of the neurotransmitters can be affected by the activity of steroids such as the gonadal hormones estrogen or testosterone. The extended argument of the authors is that "sex differences in performance of simple perceptual motor and restructuring tasks and inhibitory restructuring tasks are related... to the differential effects of the 'sex' steroid hormones on activation and inhibitions neural process." (P. 42)

There are implications of the physiological hypothesis of sex differences for the assessment of cognitive organization. "Developmental progress involves the subordination and integration of ontogenetically early, and phylogenetically primitive processes to develop mentally later more complex processes." (P. 43) The more robust a lower level function, the more difficult it is to inhibit and subordinate the lower function to a specific higher-level function which cannot appear without the subordination of that lower-level process. (For example, concrete operations are suborned to formal operations.) The dynamic opposition of achieved and emergent properties in behaviour creates some important features of individual difference. (DDR)

Abstractor's comment: This paper and its bibliography are an excellent resource. The paper is historically significant in the development of sex differences as legitimate individual differences within the range of normal human behaviour for study in psychological, sociological, and educational literature. (DDR)

Broverman, D.M., Klaiber, E.L., Kobayashi, Y., and Vogel, W. "Short-term versus Long-term Effects of Adrenal Hormones on Behaviors." Psychological Bulletin. 81 (1974): 672-694.

Purpose: To present a review and hypothesis about the relationship of short-term and long-term stress to endocrine and neural mechanisms which mediate gonadal and adrenal function.

Discussion: The argument of this review focuses on six main points:

(1) A central adrenergic-cholenergic balance in favour of adrenergic-dominance is hypothesized to enhance performance of serially repetitive tasks and impair performances on perceptual restructuring tasks, while a balance in favour of cholenergic dominance is thought to impair performances on serially competitive tasks and enhance performances on perceptual restructuring tasks. Adrenergic-dominance is found to characterize female activity. Cholenergic-dominance characterized male activity.

(2) Short-term stress enhances performance of serially repetitive tasks by inducing central adrenergic dominance. Long-term stress enhances perceptual restructuring tasks by encouraging cholenergic dominance.

(3) These phenomena may be understood in terms of the

effects of stress. Physical and emotional stress can evoke the secretion of epinephrine, which stimulates responsive brain adrenergic neurons, thereby inducing a central adrenergic state.

(4) The gonadal steroid hormones (estrogen and testosterone) tend to maintain monoamine oxidase (MAO) activity at intermediate levels which are associated with optimal adrenergic functioning, while the adrenal steroid hormone cortisol is believed to induce a lower level of MAO activity. Long-term stress interferes with gonadal steroid hormone production, thereby allowing stress-induced cortisol to drive monoamine oxidase activity too low, with the accumulation of inefficient false neurotransmitters, which in turn produces an imbalance in favour of cholenergic dominance.

(5) Gonadal steroid administration reverses the physiological and behavioural effects of long-term stress.

(6) Assessment of the central adrenergic-cholenergic balance is a complex matter. Indices of adrenergic functioning may be positively related (e.g., short-term stress) or negatively related (e.g., long-term stress), or unrelated (as in a state of emotional transition). (DDR)

Abstractor's comment: This article provides complementary information to the Broverman et al article (*Psychological Review*, 1968, Volume 75, Pages 23-50.) cited in this abstract. The interaction of steroid hormones in mediating behaviour should be considered as a response to various environmental demands. These arguments, taken with the earlier comments on adrenergic and cholenergic mediation of sex differences in cognitive and functional response, may provide provocative ideas on the issue of sex differences in response to stressful life situations. (DDR)

Ehreukranz, J., Bliss, E., and Sheard, M.H. "Plasma Testosterone: Correlation with Aggressive Behavior and Social Dominance in Man." *Psychosomatic Medicine*. 36 (1974): 469-475.

Purpose: To explore the relationship between plasma testosterone levels and the behaviour of three groups of men from a prison sample: (1) twelve chronically aggressive men; (2) twelve socially dominant men, without evidence of physical aggressiveness; and (3) twelve men who were neither physically aggressive nor socially dominant.

Subjects: Thirty-six subjects, between the ages of 18-45, were selected from a prison population. Criteria for inclusion in each group were as follows. Chronically aggressive males were characterized by chronic, violent, overt aggressive behaviour. Assault, murder, or other violent crimes characterized the reason for their confinement. Socially dominant males in group 2 were confined for non-violent felonies. Group 3 included non-dominant and non-violent males who had been imprisoned for a variety of non-assaultive crimes.

Method: Three daily blood samples were collected in the early morning, each day. These samples were centrifuged, plasma was withdrawn, and was kept frozen.

Radio immunoassay for testosterone was completed under a "blind" procedure. By this the experimenters meant that the experimenter who drew and analyzed blood samples was "blind" to information about the social and emotional behaviour of these men.

Psychological testing included a battery of psychometric tools: California Personality Inventory, the Adjective Check List, the Euss-Durke Hostility Inventory, Ly Klen Measure of Anxiety and other measures of anxiety or socialization.

Results: Physical Variables: There were no significant differences between the heights, weights or ages of the three groups.

The aggressive group of subjects had a significantly higher mean testosterone level than the non-aggressive group. The socially-dominant group also had a significantly higher mean testosterone level than the non-aggressive group. The aggressive group had a higher mean testosterone level than the socially dominant group, but the difference was not significant.

Psychological Variables: The aggressive group scored higher on indices of hostility and anti-social behaviour, and lower on indices of nuturance, affiliation, conformity, and flexibility.

Discussion: Findings demonstrate a positive relationship between testosterone, chronic aggressive behaviour, and social dominance. It is possible that high testosterone leads to a strong build and masculine appearance that might facilitate the learning of physical domination.

Abstractor's comment: Males in this study were adult, and therefore comments on the impact of these findings for pubescent males must be tentative until actual research with males in this age group has been completed. (DDR)

## SENSORY CAPACITY AND COGNITION

McGuinness, D. "Sex Differences in the Organization of Perception and Cognition." Department of Psychology, Hatfield Polytechnic, Box 109, Hatfield, Herts, 1974.

Purpose: See abstract on p. 283.

Method: See p. 283.

Conclusions: There is speculation that the source of verbal abilities and interest in people and music comes from an early ability to distinguish intensities in sound. This is more likely to be a female syndrome. It is also suggested that visuo-spatial and mathematical skills may come from an early ability to distinguish between visual stimuli (except people) and is most often a male pattern.

The author looks at many mother-child interactions as feeding into these patterns. (LAF)

Abstractor's comment: Because this section of McGuinness is highly speculative and emphasizes differences, there is a tendency to view the world as made up of two types of persons. The exceptions are not discussed. (LAF)

## STEREOTYPING, SEX PREFERENCE, AND SPATIAL PERCEPTION

Nash, S.C. "The Relationship among Sex-role Stereotyping, Sex-role Preference and the Sex Difference in Spatial Visualization." Sex Roles. 1 (1975): 15-32.

Purpose: To evaluate the intellectual consequences of sex role stereotyping and identification.

Subjects: One hundred and five Grade 6 children (46 boys, mean age 11 years and 8 months; and 59 girls, mean age 11 years and 7 months) and 102 Grade 9 children (45 boys, mean age 14 years and 6 months; and 57 girls, mean age 14 years and 8 months). Adolescents were chosen for this investigation because during this period (1) sex role requirements are augmented, and (2) many sex differences in intellectual performance begin to emerge.

Method: A variety of checklists and questionnaires was administered to each child. In a first test session, each group of approximately 25 students was tested on the Differential Aptitudes in Space Relations Test. In a second session, sex role interviews were conducted.

Results: Authors reported that sex role stereotyping increases developmentally. Sixth grade children are not as firmly committed to sex role stereotypes. Ninth grade children show distinct gender preferences.

Secondly, girls stereotype more attributes as related to sex role. Also, more girls than boys report cross-sex preferences. More girls than boys think it's better to be the opposite sex.

Sex differences in spatial performance emerge at 14. Mean scores on the differential aptitudes test show that there are no sex differences at age 11. Among ninth grade subjects, boys scored significantly higher than girls in the spatial abilities tested by the differential aptitudes test.

The authors reported relationships between sex role stereotyping and spatial performance. On the four major stereotypic rating scores, two were significantly correlated with boys' spatial performance (average adult male and actual-self). Thus, the more masculine the boy views his actual-self, the better his spatial performance. The more masculine he views other males, the worse his performance. The more masculine a girl views her self-ideal, the better her spatial performance; the more masculine she views other females, the worse her performance.

Male gender preference is positively related to spatial performance. Irrespective of the actual gender of a child, children (either boys or girls) who want to be boys score better on spatial abilities. Children who prefer to be girls do not score as well on spatial abilities.

Discussion: Sex Role Stereotyping: Sex role stereotyping continues the developmental trend established in earlier research. The authors demonstrate an increasing tendency of children to respond stereotypically as they move into adolescence. Girls are more likely to attribute sex role stereotypes to selected characteristics than boys.

Sex Role Preference: Gender preference given by children indicated that boys are more strongly invested in their own gender than girls and that older girls are more strongly invested in their own gender than younger girls.

Subjects of both sexes who preferred to be males explained their choices in terms of (1) society's preference for the male role, (2) the desirability of male activities, and (3) the high value of so-called male characteristics, such as strength, roughness, protector-provider.

Girls who preferred to be girls offered three reasons: (1) they valued "positive" female attributes, such as attractiveness, (2) they valued "negative" feminine attributes, such as dependency, (3) they shunned male obligations.

Relationship Between Spatial Performance and Sex Role Conceptions: Data derived from the Differential Aptitudes Test suggests that a sex difference in spatial performance does not emerge until middle adolescence. The authors felt that the sex differences in spatial scores found among the older subjects were not simply a function of differences in general intelligence.

Sex role stereotyping is not associated with intellectual functioning. Instead, the stereotypes one holds, which include specific information about one's views of intellectual functioning, are related to intellectual performance. Sex differences in spatial ability only exist among subjects who prefer their own sex: boys who prefer to be boys perform better than girls who prefer to be girls. A bimodal distribution of girls appears with regard to spatial abilities: girls who prefer to be boys score higher on spatial skills than do girls who prefer to be girls. Fourteen-year-old girls are less likely to prefer the other sex gender identity or to achieve in sex role inappropriate skills, and as a result a sex difference in spatial performance emerges at this age.

The findings of this study suggest a relationship between belief in, or adoption of, stereotypic sex role characteristics and intellectual performance.

Three interpretations of the relationship between sex role stereotyping, gender preference, and intellectual performance can be made. First, the socio-economic status of the children might have contributed to rigid sex role stereotyping. The socio-economic data on subjects obtained in this study were not related either to stereotyping or to the direction of gender preference. Secondly, another interpretation is that as children begin to evaluate their competencies, their talents are viewed as either sex role appropriate or sex role inappropriate. The possibility that competence precedes attitude formation requires further investigation. The authors support the third possible interpretation. This alternative is that sex role attitudes are casually antecedent to spatial performance. The argument can be explained as follows:

> "the more masculine one perceives his actual self or her ideal-self; i.e., the more one strives for (male-valued) competence, the more likely it is that one will maximize his/her intellectual potential (especially on masculine skills)." (DDR)

Abstractor's comment: The data presented and the views expressed in this article demonstrate the ways in which biological milestones can be overlooked in the attempt to attribute cognitive competency to an environmental explanation such as the one offered by this author. At no point, was it acknowledged which children in the 11-year-old sample were pre-pubescent, and which children in the 14-year-old sample were post-pubescent. Objective indications in terms of onset of menses in females and in terms of the appearance of secondary sex characteristics were not reported. It remains to be seen whether attitudes towards the sexual maturity of the children could have influenced stereotyping and gender preference, but not spatial abilities. (DDR)

# Part 3: On Sex Differences in Behaviour

1. INTRODUCTION
   Sexual Dimorphism

2. DIFFERENCES AND SIMILARITIES IN TEMPERAMENT AND SOCIAL BEHAVIOUR
   Aggression
   Dominance
   Conformity and Compliance
   Sociability
   Activity Level
   Fearfulness and Timidity

3. DIFFERENCES AND SIMILARITIES IN ABILITIES AND ACHIEVEMENT
   Perception, Learning, Memory, and General Intellectual Abilities
   Spatial Abilities
   Creativity

4. CONCLUDING REMARKS

ANNOTATED BIBLIOGRAPHY

# 1. Introduction

Part 3 deals with current research in psychology which investigates sex differences in some of the basic dimensions of behaviour of young children. The behaviours to be considered are often thought to be independent of specific social roles or specific social learning experiences. This part of the report (1) examines the consistency of sex differences (when they are found at all) within North American culture, and (2) to the extent that evidence is available, attempts to determine the cross-cultural universality of the differences.

The degree to which sex differences exist in behaviour and psychological functioning and, particularly, the source of those differences is a matter of considerable controversy. Again it should be pointed out that the presence of sex differences to any significant degree at all is comparatively rare. One quickly loses this perspective, however , when discussing those areas where differences are found. It is difficult to determine, in fact, precisely in what proportion of different "areas" of enquiry sex differences are sometimes found. Part of the difficulty lies in accurately specifying how many "areas" of psychological functioning there are, and part in the bias inherent in looking for differences. In this survey it was necessary to scan about 100 articles to find a half dozen that reported some sort of a difference according to sex.

In regard to the bias created by focusing on differences, a further caveat should be mentioned. There are two main forms that scientific research may take. One kind involves the accurate description and measurement of the phenomena of the science. The other kind attempts to go beyond mere description and measurement and attempts to test hypotheses about the dynamics underlying the phenomena that are to be described and measured. Hypotheses are tested by examining the differences that result in one variable when another variable is changed (usually experimentally, but this may occur naturally). Thus one part of social science is a deliberate attempt to find differences. Not finding differences is, for a variety of reasons, usually not very interesting and often results in the research not being published. Thus, studies that find sex differences are more likely to be published than studies that do not. This is true, of course, only if the sex differences were the main or only object of study. While the main hypotheses of a study often have little to do with sex, it is common practice (in fact, obligatory in most journals) to also inspect sex differences. As stated above, the majority of studies find no sex differences. Moreover, when none are found the matter is dropped and no further mention is made of the sex variable. If, however, sex differences are found the researchers (rightly) feel obliged to account for them. Thus, again, differences are emphasized.

One can conclude from the above, therefore, that:

1. THE CURRENT RESEARCH LITERATURE PROBABLY OVER-EMPHASIZES THE AREAS OF DIFFERENCE.

2. NOTWITHSTANDING THAT BIAS, THERE ARE RELATIVELY FEW AREAS IN PSYCHOLOGY WHERE CONSISTENT DIFFERENCES HAVE BEEN FOUND.

In those areas in which boys and girls do differ, the sex differences are relatively small compared to the inter-individual variability. Thus, although the average size of newborn males is significantly larger than the average size of newborn females, the largest female is larger than most males and much larger than the smallest male. This is true even for the most obvious sex differences, including primary and secondary anatomical sex characteristics (i.e., the averages are different, but individuals vary greatly from the average and contradict the generalization). The only point that needs to be added here is that the inter-individual variability is still great, relative to the average difference between the sexes.

Maccoby and Jacklin (1974)[1] conducted an extensive review of the literature on sex differences in behaviour up to the point of publication of their review. The review is an extension of an earlier work by Maccoby (1966)[2] and provides a detailed discussion of research findings on sex differences in the major areas of psychology. The research cited is most relevant to early childhood differences found before social learning processes have become consolidated, although many of the studies cited do extend into early adolescence and occasionally to adulthood. Readers interested in a detailed review of sex differences of any particular area of psychology would certainly find this book a useful starting point. At the end of their review of hundreds of research studies these authors attempt to draw conclusions about "widely held beliefs about sex differences." They decide, on the basis of their own review of the evidence, that certain of these beliefs are supported by evidence; certain have no factual basis at all; and many remain open questions.

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[1] E.E. Maccoby and C.N. Jacklin. The Psychology of Sex Differences. Stanford: Stanford University Press, 1974.
[2] E.E. Maccoby, ed. The Development of Sex Differences. Stanford: Stanford University Press, 1966.

Maccoby and Jacklin decide that a few basic sex differences are "fairly well established." These differences are found in the development (during pre-teen and teen years) of verbal ability (girls better than boys), visuo-spatial abilities, mathematics, and (from early childhood) aggression (boys better or greater than girls in these three areas). The largest category of beliefs about sex differences is considered to be little more than a collection of "myths," having no basis in fact. These unfounded beliefs are: girls are more "sociable" than boys; girls are more "suggestible" than boys; girls have lower self-esteem; girls are better at rote learning and simple repetitive tasks, while boys are better at higher level conceptual tasks; boys are more "analytic" (read "logical" or "rational") than girls;

girls are more affected by heredity, while boys are more affected by environmental factors; girls lack achievement motivation; girls are auditory while boys are more visual. All of these beliefs are considered by Maccoby and Jacklin to be erroneous and unsupported by fact. The final category of beliefs involves those which must remain open questions, pending the availability of more or better evidence: girls are more sensitive to tactile stimulation than boys; boys are more active than girls; boys are more competitive than girls; boys are more dominant than girls; girls are more compliant than boys; girls are more inclined to engage in maternal or nurturant behaviour.

The authors of this report have had the advantage of having access to some more recent evidence to consider along with the findings and arguments of Maccoby and Jacklin. Because their approach was cautious and thoughtful, it was felt that their general conclusions were in need of little modification. There are, however, some slight divergences of opinion and general conclusions that will be discussed in the appropriate sections. The concluding section deals with the decision regarding the current status of each of the beliefs about sex differences.

## SEXUAL DIMORPHISM

Why do some organisms come in two sexes? Biologists tell us that sexual reproduction results in each generation having a new combination of genes, half of which are received from each parent. This ability to form new combinations of genes every generation leads to a great diversity among species reproducing sexually, and this appears to be very useful in coping with the exigencies of the environment. In short, diversity has survival value.

The argument for the advantages of having two sexes does not require that the sexes need to look or behave differently. Yet usually they do. Sexual dimorphism refers to the fact that the sexes usually come in two forms. On the average, they look and act differently. One of the most consistent dimensions of difference in mammals is in size. The average male size is almost always larger, not infrequently 50 percent larger and occasionally several times larger. Some fur seal males, for example, are as much as ten times larger than some females. Among non-human primates, mammals sharing many characteristics with humans, sex differences in size are quite variable. Baboons, gorillas, and orangutans show large sex difference in size, while gibbons show none, and humans and chimpanzees show slight but consistent sex differences in size.

The size difference is usually a result of greater muscle mass, which results in greater strength and often appears to be correlated with other differences. These would appear to be related to fighting potential, such as horns, antlers, tusks, and enlarged canines. Indeed, the most widely observed sex difference in mammals involves what is loosely termed "aggression." This then might be an area to begin the consideration of sex differences in children's behaviour.

## AGGRESSION

Aggression was one of the very few classes of behaviour that Maccoby and Jacklin considered to be fairly well established. Aggression is a very complex term, referring to a great many different behaviours. Usually it conjures up images of vicious, violent clashes, of "nature red in tooth and claw." Careful studies have shown, however, that we have misunderstood the nature of aggression. The so-called "aggression" of animals is often more akin to a jousting match than a life and death struggle. Particularly, those very "armaments" mentioned above--antlers, horns, and even fangs, are used often in very ritualistic and relatively harmless ways when male animals fight (e.g., Eibl-Eibesfeldt 1970). Thus, the greater "aggression" of males may often be of this form. The tendency to fight (i.e., quarrel) over food, to retaliate when attacked, or (in the case of carnivores) to attack prey, may show sex differences that are less clear-cut than the more ritualized combats that fairly clearly are characteristic of males, at least in non-human species.

Among children and other young primates these ritualized combats may take the form of play fighting or "rough and tumble play." Recent research of children (Blurton-Jones 1967, 1972; Smith and Connolly 1972; Smith and Green 1975) suggests that this rough and tumble play (chasing, wrestling) can and should be distinguished from true fighting (involving hitting, kicking, biting). Children seem to be clear on the difference between these two, but adults, including parents and psychologists, often are not. Most of the research on children's aggression has unfortunately confounded these two. Thus, although there have been many studies of children's aggression (and it has generally been found the boys are more aggressive than girls--see Maccoby and Jacklin 1974, pp. 230-330), most of them have failed to distinguish between rough and tumble play and true fighting. It is therefore impossible to determine whether boys engage in more of one kind of behaviour or both. In the recent studies that have separated the two, sex differences appear somewhat more often for rough and tumble play than for true fighting. The authors of at least one study (Whiting and Edwards 1973) suggest that rough and tumble play was the most consistent cross-cultural sex difference. Among non-human primates, males are found to engage in much more rough and tumble play than females (e.g., Ruppenthal, Harlow, Eisele, Harlow, and Suomi 1974). Once again it should be emphasized that the evidence is far from perfectly consistent. One study (Blurton-Jones 1972) found girls to engage in more rough and tumble play than did boys in one group studied.

There is another problem involved in interpreting sex difference in either kind of aggression. Most studies do not take into account the total number of interactions the children engage in, or the general activity level (see below). Those studies that do investigate other activities besides aggression often find that while boys engage in more "aggressive" acts, they also engage in a greater number of other acts (frequently considered pro-social) than do girls (Gottfried and Seay 1974). Thus, supposed differences in aggression may simply be a by-product of a higher level of activity generally. Indeed, it may be that, as a proportion of their total number of activities, boys are less aggressive than girls. However, at least one recent study (Brindley, Clarke, Hutt, Robinson, and Wethli 1973) did find preschool boys to be proportionately more aggressive than girls. Brindley et al. do seem to have studied true fighting, though unfortunately their definition of aggression included a category specified only as "threat."

Aggressive behaviour has been, of course, intensively studied in psychology in general, and in the psychology of early childhood in particular. Many theorists have sought to explain aggression in children through child-rearing procedures or through imitation of models in the child's environment (e.g., Bandura and Walters 1963). Much attention has been directed in recent years to the particular effects of mass media on children's aggression. In view of the fact of extreme sex bias in television programming (see section on socialization and bibliographic entry for Sternglanz and Serbin 1974 in Part 1) and of the possibility of differential parental and teacher reaction to aggression in boys and girls (see again section on socialization) even the early emergence of average sex differences in aggression may be culture specific. In this regard, a study by Blurton-Jones and Konner (1973) is particularly interesting. This is one of the few studies in which the same researchers studied children from both a literate and a non-literate culture (Great Britain and the !Kung Bushman), in the same manner, and in their respective "natural" environments. In this study boys were found to be more aggressive (in terms of true fighting behaviour) than girls in both cultures. In a similar study, Whiting and Edwards (1973) studied a larger sample of cultures, but with somewhat less rigorous methodology, and found some evidence for greater aggression in boys than in girls, but not consistently for all cultures. It may be argued that other cultures, such as that of the !Kung people, may also exert differential social pressures on boys and girls. Nonetheless, the very similar levels of aggression in boys and girls from two such dissimilar cultures is striking. Clearly more cross-cultural research of this type is needed before firm conclusions can be drawn regarding the cross-cultural consistency of sex differences in aggression.

In consideration of these two major problems, these authors feel that somewhat too much confidence has been placed in the conclusion that boys are more aggressive than girls by Maccoby and Jacklin, as well as others. More careful study is required to separate play fighting from true fighting, and both of these must be considered along with the total amount of social behaviour of the children.

## DOMINANCE

The concept of dominance suffers only slightly less from ambiguity than the concept of aggression. It is variously defined as: "having preferential access to resources," "directing or influencing group activities," or "leadership." It usually involves aggression, "toughness," or otherwise engaging in activities that may influence and direct the behaviour of others, in a generally coercive way. Studies of young children often do not find sex differences, but when they do, it is the boys who are generally found to be more dominant (Maccoby and Jacklin, pp. 258-259). This would seem to follow if rough and tumble play represents the ritualized kind of aggression that determines one's position in a dominance hierarchy. Dominance appears to be an issue with boys both verbally, as "toughness," and behaviourally in terms of attempts to coercively control others. Among certain other primates, males have become very specialized in this regard, while among others the differences are less clear-cut (e.g., Kummer 1971). At present there is insufficient evidence in this area to draw conclusions concerning human sex differences.

## CONFORMITY AND COMPLIANCE

A characteristic which may seem opposite to that of dominance is that of compliance or conformity. Research has generally found young girls to be more compliant with adult requests and demands. The finding that girls are more resistant than boys to temptation probably similarly reflects a readiness to comply with an adult experimenter's instructions (Maccoby and Jacklin, pp. 266-267). Although there is by no means perfect agreement among the studies, the evidence does suggest a sex difference here. There is also evidence that girls orient to and interact with adults more than do boys.

On the other hand, the research findings with regard to conformity to peer pressures show no differences in so many research settings that the few who find a direction have little impact. This was the conclusion drawn by Maccoby and Jacklin, and it is supported by more recent research.

A related concept is that of cooperation. Brindley, Clarke, Hutt, Robinson, and Wethli (1973) found girls to be more cooperative than boys. Girls, in particular, seemed to direct such cooperative behaviours to younger girls.

A difficulty arises in drawing general conclusions about either dominance or conformity because the specific nature of the issues involved and the importance of the group may markedly and differentially influence boys and girls. This could give rise to much of the inconsistency of the research findings.

## SOCIABILITY

It is probably fair to say that it is a widely accepted belief that girls are more sociable than boys. Maccoby and Jacklin reject this as an unfounded belief without the support of evidence. Studies published since their review confirm this. Girls do not seem to be more oriented to social stimuli or motivated for social rewards (Jennings 1975).

One recent study, however, did find that one-year-old girls looked at, remained near, touched, and vocalized to their mothers more than did boys. Also, indirect evidence for greater sensitivity to social stimuli on the part of girls is provided in recent studies by Buck and colleagues (Buck 1975; Buck, Miller, and Caul 1974), who found evidence that girls were better non-verbal communicators of emotional reactions. Post and Heatherington (1974) also found girls better able to make use of certain non-verbal social signals.

Girls do not interact more with peers. In fact, the opposite is generally true. Blurton-Jones and Konner (1973) found that for both London children and Bushman children boys were much more likely to play with peers than were girls, while girls interacted with adults more than with children. Harper and Sanders (1975) also found very consistent evidence, in studies extending over several years, that boys spend much more time in activity with peers than do girls, while girls spend more time interacting with adults than do boys. Maccoby and Jacklin note this but tend to gloss over this unexpected difference. In fact, this is one of the most consistent findings in the studies reviewed by Maccoby and Jacklin (pp. 206-207) as well as in subsequent studies. Also, as previously noted, studies of aggression have incidently noted more pro-social behaviour among boys.

Both the greater aggression and greater sociability may be explained by two other sex differences. In fact the differences in aggression and sociability are probably merely secondary and not primary sex differences. They may, in fact, be merely necessary consequences of two basic sex differences. One of these differences is group size. Boys tend to congregate in larger groups (Harper and Sanders 1975; Hutt 1972) than do girls and hence have an opportunity to engage in more contacts (as well as more contacts with a greater number of others) and, potentially, more sources of conflict. In addition, given that much of the group interaction involves rough and tumble play, it would indeed be surprising if more true fighting did not occur among boys. It is indeed surprising that the evidence for a sex difference in true fighting is not more clear than it is.

The other difference that may give rise to differences, both in aggressive and pro-social behaviours, is that boys may simply be engaged in more behaviours of many sorts because of a difference in activity level.

## ACTIVITY LEVEL

Activity level is a very general category of behaviour and there are a great variety of ways to measure activity. Some common methods involve area traversed per unit of time, limb movements (often using specially modified wrist watches to count movements), vigour of play, observer ratings of general activity, and teacher questionnaires. Unfortunately these various methods of measuring activity do not correlate very well. In one study, difference items on a teacher questionnaire failed to relate to one another in any meaningful way. Such data gives rise to doubts about the concept of activity level being a useful dimension of behaviour.

Given the ambiguous status of the concept of activity level, it is not surprising that few sex differences in activity level are observed at all in the first two years of life. After two years of age, however, differences are frequently found and when they are, they are almost invariably in the direction of greater activity for boys, particularly when the measures of activity involve locomotion, large muscle activity, and vigour of play. Maccoby and Jacklin suggest that boys "appear to be especially stimulated to bursts of high activity by the presence of other boys." This is certainly consistent with the data on rough and tumble play and, given the evidence that boys do tend to play in large groups, suggests that boys will in fact be engaged in high levels of activity more often than girls in the course of the day. This is also consistent with the higher metabolic rate of boys as it is with the fact that nine times as many boys as girls are diagnosed as "hyperactive."

A number of more recent studies have found boys to be more active than girls (Battle and Lacey 1972; Brindley, Clarke, Hutt, Robinson, and Wethli 1973; Gottfried and Seay 1974). It is frequently argued that parents and teachers are more lenient toward hyperactive and disruptive behaviour in males than in females. However, contrary to this hypothesis, Battle and Lacey (1972) found that maternal control and punitiveness was related to hyperactivity in boys but not in girls. On the other hand, some studies continue to be reported that find no sex differences in activity level (Brooks and Lewis 1974; Routh, Schroeder, and O'Tuama 1974; Willerman 1973; Willerman and Plomin 1973).

This inconsistency should not be surprising to the reader who should, by now, be aware of the inconsistency in the literature. However, it should not be taken as indicating that the general tendency of the evidence should be disregarded. It should be recalled that children vary among themselves within any group and from group to group. The sex differences between group averages may be very real as indicated by the general tendency of the evidence, but very slight relative to the great individual differences within groups. Thus, while boys may indeed be (statistically) more active than girls, this fact may be very difficult to determine without very intensive studies of very large groups. This also implies, of course, that within any given sample of boys and girls, it would be difficult to determine the sex of an individual on the basis of their activity level, and many girls will be more active than a substantial portion of boys.

## FEARFULNESS AND TIMIDITY

It is a widely held stereotype that girls are more fearful and timid than boys. The evidence for this is very mixed. Few differences in crying in infancy have been noted, and when they are, it is usually in the direction of boys crying more than girls (e.g., Moss 1967). However, recent studies (Brackbill 1975; Lyberger-Ficek and Sternglanz 1975) suggest that it is only circumcised males that cry more than females, while uncircumcised males may indeed cry less than female infants. Crying may indicate states other than fear, however, and more direct observations of fear reactions to strange people, loud sounds, and strange environments may be more relevant to this question. Generally no differences are found in such studies of fearfulness, but when they are they continue to indicate girls to be more fearful than boys (e.g., Jacklin, Maccoby, and Dick 1973). Occasionally the opposite is found (Brooks and Lewis 1974). Questionnaires about feelings of fearfulness and anxiety very often yield sex differences, but these probably merely reflect the unwillingness of boys and men to admit to such feelings. There are a few studies suggesting that boys are more likely to expose themselves to high levels of risk than are girls (Cohen, Dearnaley, and Hansel 1955; Ebbesen and Haney 1973; Slovic 1966). The question of sex differences in fearfulness is still open.

# 3. Differences and Similarities in Abilities and Achievement

## PERCEPTION, LEARNING, MEMORY, AND GENERAL INTELLECTUAL ABILITIES

The findings in these areas are fairly clear and consistent. With the possible exception of tactile sensitivity, in which girls may be somewhat more sensitive to touch than are boys, sex differences are rare in perceptual abilities such as vision and audition. Sex differences are also rare in learning, whether simple conditioning, complex learning, conditioning, discrimination learning, problem solving, probability learning, or any of the other learning paradigms. Few differences in memory abilities have been found. There is some evidence that girls are sometimes superior in terms of verbal memory. Research on memory for numbers and other items rarely reflects sex differences.

Consistent with the above, few sex differences are found in tests of general ability.

## SPATIAL ABILITIES

Male superiority in spatial abilities is a widely accepted belief and is included as one of the "true" sex differences by Maccoby and Jacklin, but only after age twelve. Recent cross-cultural studies have failed to find sex differences prior to this age as well (Jahoda and McGurk 1974; Kagan 1974). Also recent visuo-spatial research involving perspective taking in young children has consistently failed to show sex differences.

## CREATIVITY

Maccoby and Jacklin (1974) find relatively little evidence for sex differences in creativity, although some authors fairly consistently find boys more creative than girls (e.g., Torrance 1965). On the other hand, Rosenfeld (1974) did not find sex differences in creativity among children. She did report, however, that both boys and girls were much less creative when dealing with female stereotyped objects than when dealing with male stereotyped objects. It appears that little girls have rather uncreative toys foisted upon them. It is not surprising that it was found that girls will more readily play with "sex-inappropriate" toys (i.e., boys' toys) than will boys (play with girls' toys) in studies of "sex typing" using toys (e.g., Wolf 1975). Also, Rheingold and Cook (1975) found that little boys are provided with a much greater variety of toys than are little girls. If there is anything at all to the idea that children's play is functional for intellectual development, such findings are very disturbing.

The current literature on sex differences in behaviour in early childhood suggests very few sex differences in behaviour. Where sex differences are found, the evidence is far from consistent. The inconsistency arises, however, not from contradictory evidence, whereby one investigator finds girls' behaviours to be greater than boys' on some dimension and another finds that boys' are greater than girls'. Rather, it is usually the case that when differences are found they are typically in one direction (i.e., one sex displays more of the behaviour than the other), but that often no differences are found. Sometimes the failure to find a difference results from crude or inappropriate measures of the behaviour, and sometimes because of small sample sizes. Both of these problems become more serious as the magnitude of the difference between group measures decreases, relative to the differences between individuals within groups. Thus, the most valid conclusion concerning the inconsistent findings of sex differences is that while they may reflect real differences, they are not large differences. Overall then, sex differences in behaviour are few and those that do exist are not great.

The conclusion based on the most recent research regarding aggression is somewhat more guarded than that of Maccoby and Jacklin. The reason for this is the conceptual and methodological confusion of much of the early research upon which their conclusions were based. It now appears that it is unlikely that any simple sex difference will be found that incorporates all types of aggressive behaviour. Current evidence suggests that play fighting or rough and tumble play may be a general characteristic of young males of almost all primate species, including people in a variety of cultural settings. The question of sex differences in true fighting is still an open one. The same may be said for dominance behaviour.

It can probably be stated with confidence that there exists no sex difference with regard to a general characteristic of conformity or compliance. Girls appear to be more compliant in certain situations and boys in others.

It may also be said with confidence that there is no sex difference in sociability. There is, however, very consistent evidence that girls interact more with adults and that boys interact more with male peers. Also, boys tend to play in larger groups than do girls. There is also evidence that this difference emerges early and holds for different cultural samples. Thus, while in agreement with Maccoby and Jacklin that the belief that girls are more sociable than boys is incorrect, there do exist specific differences in sociability.

Another point of agreement with Maccoby and Jacklin is that the existence of sex differences in activity level remains an open question. There exists only weak evidence at present for pervasive sex differences in activity level. Similarly, the question of sex differences in fearfulness and timidity remains open.

There seems little reason to qualify the conclusions of Maccoby and Jacklin regarding sex differences in cognitive or intellectual abilities.

The evidence concerning the socializing of sex typing is interesting. There is little evidence that parents and teachers directly, or at least consistently, reward "sex-appropriate" and punish "sex-inappropriate" behaviour. Much clearer evidence may be found in the studies of mass media (and in educational materials as surveyed in Part 1 of this report) which provides many examples of clear and pervasive sex typing of behaviour. This is particularly intriguing in view of the weak and inconsistent sex differences that are found in early childhood, as opposed to the obvious sex differences in the social aspirations and achievements of men and women. One might conclude then that too much emphasis has been placed on the parent and individual teacher as agents of the socialization of sex typing in children, and too little on the mass media. The very consistency and extremity of the sex bias in the mass media argues for their potency in shaping children's sex role perceptions, particularly considering the amount of time that children are exposed to these sources of influence in the classroom and in the living room. This is also an encouraging finding, given that these sources are potentially susceptible to influence by social agencies.

# Annotated Bibliography

Works listed in this bibliography include recent studies that employ methods that permit the examination of the consistency of sex differences or similarities over different populations, such as groups differing according to socio-economic status, ethnicity, literacy, or among special populations, such as gifted or retarded children. Studies that make specific comparisons between the sexes at different developmental ages or examine the sex stereotyping in various media are also included. Certain studies that examine sex differences and similarities among non-human primates may also be considered relevant to human behaviour.

## DIFFERENCES AND SIMILARITIES IN TEMPERAMENT AND SOCIAL BEHAVIOUR

### AGGRESSION

Bandura, A., and Walters, R.H. *Social Learning and Personality Development*. New York: Holt Rinehart and Winston, 1963.

Blurton-Jones, N.G. "Categories of Child-child Interaction." In *Ethological Studies of Child Behaviour*, edited by N.G. Blurton-Jones. London: Cambridge University Press, 1972.

------. "An Ethological Study of Some Aspects of Social Behaviour of Children in Nursery School." In *Primate Ethology*, edited by D. Morris. London: Wiedenfeld and Nicholson, 1967.

Blurton-Jones, N.G., and Konner, M.J. "Sex Differences in Behaviour of London and Bushman Children." In *Comparative Ecology and Behavior of Primates*, edited by R.P. Michael and J.H. Crooks, pp. 689-750. London and New York: Academic Press, 1973.

Subjects: Two samples of children, one of London British children, the other of Zhun/twa (!Kung) Bushman children, ranging in age from 2-6 years old, included were 13 Bushman girls, 10 Bushman boys, 11 London girls and 10 London boys.

Measures: Both samples of children were observed individually in their natural, familiar habitat. Objective, specific, behaviour items were recorded, such as runs, hits at, laughs, frowns, cries, oblique eyebrows, fixates, etc. For the purpose of comparing the sexes in the two cultures, the behavioural items were grouped into the following categories: (1) antagonism, (2) rough and tumble play, and (3) social interactions.

Results: (1) Boys engaged in more antagonism than girls,,, and London children engaged in the same level of antagonism as Bushman children. (2) Among London children, boys engaged in considerably more rough and tumble play than London girls. There were no sex differences among the Bushman children. This finding results from the fact that Bushman girls engaged in more rough and tumble play than London children. (3) Talking to children was more common for boys than for girls in both cultures. No other sex differences in sociability were consistent for both cultures. (4) In both cultures boys interacted more often with children than with adults, while the opposite was true of girls. (5) No sex differences were reported for use of objects. (6) London boys engaged in more sustained directed attention than London girls. No sex differences were observed among Bushman children. (7) London boys scored significantly higher than London girls in general activity. No sex differences were observed among Bushman children.

Comments: (1) The study represents possibly the only cross-cultural study that looks in detail at the same objective behaviours in both cultures in boys and girls of the same age. (2) Many of the sex differences found in the London sample were not found in the Bushman sample because of higher rates of the behaviours in question in Bushman girls than in London girls. (3) Some sex differences were attenuated in the Bushman sample but often remained significant.

Brindley, C., Clarke, P., Hutt, C., Robinson, I., and Wethli, E. "Sex Differences in the Activities and Social Interactions of Nursery School Children." In Comparative Ecology and Behaviour of Primates, edited by R.P. Michael and J.R. Crook. London and New York: Academic Press, 1973.

Subjects and Measures: The subjects in a series of three studies were 3- to 5-year-old children in state-run nurseries in England. In study 1, 15 boys and 15 girls were observed in the nursery for instances of aggression, which included hitting, kicking, breaking or throwing objects or toys, as well as threatening (which was not defined). In study 2, 15 boys and 15 girls were observed for instances of "cooperative" behaviour, which is not defined specifically, but apparently involved "mutual activity." In study 3, 20 girls and 20 boys were observed and the behaviour compared on "sedentary activities," "physical activities," and "constructive activities."

Results: Boys were more "aggressive" than girls, especially to other boys. "Cooperative" behaviour showed somewhat more complex sex differences. The greatest number of "cooperative" behaviours were observed to be made by girls to younger girls, next by boys to older boys, and then by girls to younger boys. Overall, girls showed more "cooperative" behaviours. Girls spend more time in sedentary and "social" activities while boys spend more time in physical and constructive activities.

Cramer, P., and Hogan, K.A. 1975.

See abstract in Dominance section.

Eibl-Eibesfeldt, I. Ethology: The Biology of Behavior. New York: Holt, Rinehart and Winston, 1970.

Gottfried, N.W., and Seay, B. 1974.

See abstract in Activity Level section.

Kirchner, E.P. "The Fight Question: A Mirror of Differential Socialization, An Instance of Discrimination Against Little Boys." Developmental Psychology.
1110 (1974): 300.

Subjects: A total of 246 preschoolers (65% white, 35% black), 51 three-year-olds, 125 four-year-olds, 70 five-year-olds, equally divided by sex, were studied.

Measures: Retaliatory behaviour (i.e., a hit-back response) was determined according to the response for the "fight question" (from the Wechsler Preschool and Primary Scale of Intelligence). A child would be asked what she or he would do if a smaller child than she or he were to start a fight ("fight question").

Results: "Hit-back" response or retaliatory behaviour did not decrease over age. Boys more frequently than girls were found to give the "hit-back" response. Further analysis of sex by age showed that there was a tendency for older boys to be less retaliatory, while older girls were more retalitory.

Comments: Since girls (in our society) are believed to be less aggressive than boys, the slightly increased retaliatory response of older girls led the author to speculate that recent socialization practices for girls must have been changed to account for this finding.

Langlois, J.H., Gottfried, N.W., and Seay, B. "The Influence of Sex of Peer on the Social Behavior of Preschool Children." Developmental Psychology.
8 (1973): 93-98.

Subjects and Measures: Thirty-two black children, 16 boys and 16 girls, 3 to 5 years of age, from middle-class families, were observed in same-sex or different-sex dyads for four, 15-minute sessions. Partners were switched after 2 sessions and replaced with another same-sex partner for half of the children and with a different-sex partner for the other half. Observations were made of socially directed behaviours (touch, hit, hit with object, vocalize, verbalize, withdraw, approach, smile, frown, manipulate, proximity) and object-oriented behaviours (transport, sit on, manipulate, oral contact, throw, embrace, stand).

Results: Complex interactions among sex of subjects, age of subjects, and sex of partner preclude a meaningful summary of the results.

Ruppenthal, G.C., Harlow, M.K., Eisele, C.D., Harlow, H.F., and Suomi, S.J. "Development of Peer Interactions of Monkeys Reared in Nuclear-Family Environment." *Child Development*. 45 (1974): 670-679.

Schwartz, J.C., Strickland, R.G., and Krolick, G. "Infant Day Care: Behavioral Effects at Preschool Age." *Developmental Psychology*. 10 (1974): 502-506.

A comparison made of social, motor, and intellectual development of home-reared and day-care children.

Subjects: Nineteen children, 5 to 22 months of age, consisting of 11 girls and 8 boys, who had attended preschool programs for 24 to 26 months' duration, were compared with a matched group of children who had not had preschool experience. There was a slight preponderance of non-white children in both samples.

Measures: Children were rated by teachers after a period of four months (in a new group) on nine behaviour traits assessing emotional, social, motor, and intellectual development.

Results: The infant day-care group was significantly more aggressive, motorically active, and less cooperative with adults. In no analysis were there any sex differences.

Smith, P.K., and Connolly, K. "Patterns of Play and Social Interaction in Pre-school Children." In *Ethological Studies of Child Behaviour*, edited by N.B. Jones, pp. 65-95. London: Cambridge, 1972.

Abstracted in Maccoby and Jacklin 1974.

Smith, P.K., and Green, M. "Aggressive Behavior in English Nurseries and Play Groups: Sex Differences and Response to Adults." *Child Development*. 46 (1975): 211-214.

Subjects: Girls and boys, 2-1/2 to 5 years, British, from 5 nursery schools, 5 day nurseries, and 5 play groups from 2 cities in Northern England. Numbers of children in each setting varied from 14 to 48.

Measures: Number of aggressive incidents.

Results: The majority of aggressive incidents (73%) were classified as property fights. Conflicts between boys were most common, while all-girl or mixed-sex conflicts were equiprobable. Teachers were equally likely to intervene in all-male, all-female, or mixed-sex conflicts.

Comments: This study does not support speculations concerning differential adult responsiveness to aggression in boys and girls. It shares a limitation of most studies of sex differences in aggression. The precise nature of the aggressive responses is not clear (although rough and tumble play was apparently excluded). Thus, although the authors imply that a major division exists between property and non-property fights, no information is given about the relation of this difference to sex.

Tuddenham, R.D., Brooks, J., and Milkovich, L. 1974.

See abstract in Activity Level section.

Whiting, B., and Edwards, C.P. "A Cross-cultural Analysis of Sex Differences in the Behavior of Children Aged Three Through Eleven." Journal of Social Psychology. 91 (1973): 171-188.

Subjects: Direct observations for 17, five-minute periods over several months were made of children 3 to 11 years of age in six cultures. In four societies (Taira in Okinawa, Khalapur in India, Tarong in the Philippines, and Orchard Town in the U.S.) 12 boys and 12 girls were observed. In two, the Juxtlahuaca in Mexico and the Nyansongo in Kenya, only 11 of each sex and 8 of each sex were observed respectively.

Measures: One or more measures each were used to assess five feminine stereotypes: dependency, sociability, passivity, nurturance, and responsibility, as well as two masculine stereotypes: dominance and aggressiveness.

Results: Sex differences observed in the six cultures generally conformed to the stereotypes, though with far from perfect consistency. The most consistent findings were that girls were more likely to seek physical contact (dependency) and offer help and support (nurturance), while boys were more likely to engage in rough and tumble play and engage in insults. The differences in physical contact and rough and tumble play are suggested to be the most likely candidates for a biophysical genesis.

The authors attempt to explain much of the consistency in sex differences across cultures by noting consistencies in task demands across cultures. Boys more often engaged in animal husbandry, while girls more often were involved in domestic chores, food preparation, and care of siblings. Girls also interacted more with adult females and infants. Boys interacted less with adults and more with peers. Finally, girls were likely to be found nearer home than were boys.

DOMINANCE

Brindley, C., Clarke, P., Hutt, C., Robinson, I., and Wethli, E. 1973.

See abstract in Aggression section.

Cramer, P., and Hogan, K.A. "Sex Differences in Verbal and

Play Fantasy." Developmental Psychology. 11 (1975): 145-154.

This study is essentially a replication of a 30-year-old study published by Erikson (in 1951 in the Journal of Orthopsychiatry) concerning children's fantasy play productions. In the original study girls were found to create indoor scenes, use indoor space for action, construct elaborate entrances to the indoor space, and finally, to express concern for the intrusion into the inner space. Boys, on the other hand, used blocks and vehicles more, created outdoor space, created erections and protrusions, such as towers and turrets, and indicated some anxiety about the collapse of erected structures and falling from heights.

This study also attempted to replicate a more recent set of studies in which girls' fantasy stories followed a pattern of depicting a series of deprivations followed by a turning point leading to a positive ending (deprivation-enhancement) while boys show the reverse pattern (enhancement-deprivation).

Subjects: Two groups of children were studied: a younger group, ranging in age from 3 years 7 months to 6 years 3 months (22 girls and 23 boys), and an older group ranging in age from 9 years 8 months to 12 years 10 months (22 girls and 25 boys). The subjects were described as white middle and upper-middle class, above average in intelligence and as attending private schools.

Measures: All children were tested twice. In the first session the child was asked to tell stories based on two pictures. In the second session children were presented with a set of materials including blocks, vehicles, doll furniture, toy animals, flexible dolls (in uniform or domestic clothing) and asked to produce a dramatic construction for an "exciting scene from an imaginary moving picture." The child was subsequently asked to describe the story corresponding to the construction.

The first story was scored in terms of the deprivation-enhancement pattern.

The dramatic construction was scored in terms of the characteristics described for the Erikson study.

Results: For both pictures, older girls showed the deprivation-enhancement order significantly more than younger girls and boys at both ages.

The dramatic productions revealed a number of sex differences in agreement with the earlier findings of Erikson. Boys, and especially older boys, as compared to girls used more blocks, vehicles, uniformed dolls, and built more horizontal and especially vertical structures and made more use of exterior space and dramatic themes involving danger-violence (often involving falling from, or collapsing of, vertical structures). Girls, especially older girls, as compared to boys used more domestic dolls, furniture, built gates and arches, walls, enclosures and partitions, used indoor themes (including indoor action) of passivity and "goodness" (i.e., being good). Themes involving intrusions of the inner space were most common among older girls.

Comments: The authors contend that some, but not all, of the findings may be explicable in terms of differential socialization (e.g., the use of vehicles, blocks and some of the themes). The authors feel that the data more strongly support Erikson's psychoanalytic interpretation, especially since most of the differences were found to be strongest with the older preadolescent group. According to psychoanalytic theory, the children (boys) are just entering the phallic stage and hence are concerned about erections and protruberances and are especially anxious about them, while females would be mainly concerned with protecting internal spaces from intrusions (one favourite of them involved a male intruder at the gate or entrance way to the interior the girl had constructed). While one may be hard pressed to account for all the detailed findings of this study with any one set of hypotheses, the main non-obvious findings relate to the inner- versus outer-space and erection versus gate or portal differences. It is fairly clear from earlier studies cited herein that boys spend much more time out-of-doors and in vigorous activity than do girls. Thus the degree of activity and the choice of locale for the fantasies may be governed by this experience. Moreover, the choice of the indoor setting may preclude the erection of very tall structures by girls (on logical grounds). The use of the indoor theme may limit the action in a number of other ways. The intruder at the gate may represent a highly "exciting" event (as called for in the instructions), given the constraint of indoor activities. Where else indeed is the action to come from?

Whatever the true explanation, the magnitude of the differences found in this study are very dramatic and appear to represent dramatic and clear-cut differences.

Kummer, H. Primate Societies: Group Technique of Ecological Adaptation. Chicago: Aldine Atherton, 1971.

Whiting, B., and Edwards, C.P. 1973.

See abstract in Aggression section.

CONFORMITY AND COMPLIANCE

Brindley, C., Clarke, P., Hutt, C., Robinson, I., and Wethli, E. 1973.

See abstract in Aggression section.

Geshuri, Y. "Discriminative Observational Learning: Effects of Observed Reward and Dependency." Child Development. 46 (1975): 550-554.

Subjects: Study 1 consisted of 48 second grade children and 24 college students, equally divided by sex. Study 2 included 6 males and 6 females from each of the following levels: preschool; second, fourth, and sixth grades; and college.

Measures: Subjects were shown pictures of paired items from which a female model selected her choice. The model was differentially reinforced (i.e., positive, neutral, or negative). Then subjects were asked to make their choice and to recall the model's choice.

Results: All subjects, except college students, were strongly influenced by differential, vicarious reinforcement. That is, reward increased imitation while punishment decreased imitation. Sex differences approached significance. Girls imitated and recalled model's choices more than boys. The latter should be qualitied by the fact that only a female model was used in the experiments.

Masters, J.C., and Pisarowicz, P.A. "Self-reinforcement and Generosity Following Two Types of Altruistic Behavior." Child Development. 46 (1975): 313-318.

Subjects and Measures: Twenty-four boys and 24 girls from second grade participated in a task where they self-dispensed rewards.

Results: Boys rewarded themselves with more tokens for task accomplishments than did girls.

Oliver, P.R., and Hoppe, R.A. "Factors Effecting Nonreinforced Imitation: The Model As a Source of Information or Social Control." Journal of Experimental Child Psychology. 17 (1974): 383-398.

Three studies of childrens' imitation of reinforced and non-reinforced behaviour of adults were conducted.

Subjects and Measures: The subjects were 208 kindergarten, second grade and fourth grade children, drawn from the Victoria, B.C. public school system. The frequency of matching a same-sex adult model's behaviour was recorded.

Results: No sex differences were observed in the first two studies. In the third study, boys produced more reinforced responses than did girls. However, since only one adult model of each sex was involved in the study, the differences between boys and girls may be attributable to idiosyncratic differences between the two models. Thus the sex differences found in the study are uninterpretable.

Schwartz, J.C., Strickland, R.G., and Krolick, G. 1974.

See abstract in Aggression section.

Shapira, A., and Madsen, M.C. "Between- and Within-group Cooperation and Competition among Kibbutz and Nonkibbutz

Children." Developmental Psychology. 10 (1974): 140-145.

Subjects: Experiment 1: 96 Kibbutz, 96 Israeli city boys and girls (from varied SES), aged 9 to 11 years. Experiment 2: same as above, except for age of children (8 to 11 years old). Experiment 3: 138 Kibbutz, 138 Israeli city children (variable SES), 138 American children (upper-middle class), aged 8 to 11 years, equally divided by sex.

Measures: In experiments 1 and 2, children in groups of four played cooperation games, wherein they represented themselves under one condition and represented their group in another condition. In experiment 3, children were compared in their selection of a group versus an individual goal.

Results: Experiments 1 and 2, the Kibbutz children were found to be more cooperative and more group influenced than the city children. Similarly in experiment 3, the group goal was more likely to be chosen over the individual goal by the Kibbutz children than by either of the Israeli city or American children, who did not differ from each other. The Kibbutz children appeared to be group-oriented, even when it was not economically adaptive. There were no sex differences found in experiments 1 and 3. In experiment 2, which involved both within-group and between-group competition, urban girls performed more poorly than urban boys, Kibbutz boys and girls under the between-group conditions. Sex differences appeared generally less marked in the Kibbutz sample.

Tuddenham, R.D., Brooks, J., and Milkovich, L. 1974.

See abstract in Activity Level section.

Whiting, B., and Edwards, C.P. 1973.

See abstract in Aggression section.

## SOCIABILITY

Blurton-Jones, N.G., and Konner, M.J. 1973.

See abstract in Aggression section.

Brindley, C., Clarke, P., Hutt, C., Robinson, I., and Wethli, E. 1973.

See abstract in Activity Level section.

Buck, R. "Nonverbal Communication of Affect in Children." Journal of Personality and Social Psychology. 31 (1975): 664-673.

Subjects: Ten male and 5 female preschoolers (4-6 years) in study 1, and 8 males and 6 females (5-6 years) in study 2.

Measures: Children were assessed in terms of their ability as "senders" of affective (emotional) reactions nonverbally. Also preferences for sex-stereotyped activities were assessed.

Results: No overall sex differences were found, although one test suggested that females were better senders than males. Male stereotyped activities were liked by both males and females, though slightly more so by males, while female stereotyped activities were liked by girls and rejected by boys.

Comments: Research with adult North Americans has found the females are more effective communicators of emotional reactions than males. Such a finding is clearly related to the stereotype of the "emotional" women found in our culture. Apparently, this sex difference is only marginally present, if present at all, in preschool children, even though sex stereotyping in terms of preferred activities is clearly present. The author interprets these results as suggesting that the sex difference found in adult North Americans is a result of socialization.

Buck, R., Miller, R.E., and Caul, W.F. "Sex, Personality, and Physiological Variables in the Communication of Affect via Facial Expression." Journal of Personality and Social Psychology. 30 (1974): 587-596.

An earlier study found that facial communication was more accurate between female pairs than between male pairs. This study attempted to determine whether women were better at expressing ("sending") facial signals or interpreting ("receiving") them.

Subjects and Measures: The subjects were 64 undergraduates, equally divided by sex into 32 sender-receiver pairs. Senders were presented with slides which were sexual, scenic, or unusual, or which showed pleasant people or unpleasant people. Heart rate and skin conductance (as measures of physiological arousal) were taken on senders. Receivers observed senders' reactions via a silent video monitor and judged both the nature of the slides being observed and the pleasantness of the senders' reactions.

Results: Females were more accurate senders than males. No sex differences for receiver ability were found. Subjects with less physiological responsivity tended to be better senders. Individuals who were good senders and showed little physiological responsivity were termed "externalizers" while subjects who were poor senders and had relatively great physiological responsivity were termed "internalizers." There was a tendency for females to be externalizers and for males to be internalizers.

Comments: These results have two interesting implications. First, females were not more emotional but more expressive of emotions than were men. If this is generally true, then it is not difficult to understand how the longstanding (incorrect) stereotype of the "emotional" female may develop. Second, the authors speculate that the expression of emotion in young boys leads to disapproval more often than in the case of girls. This may have the effect, on the one hand, of reducing the expressivity of males and on the other hand, of increasing physiological arousal. Why the reduction of overt expression of emotion would lead to an increase in "internal" arousal is not clear. It is also possible, of course, that it is biologically less adaptive for males to communicate internal states to conspecifics than it is for females.

Crandall, V.J., and Rabson, A. "Children's Repetition Choices in an Intellectual Achievement Situation Following Success and Failure." Journal of Genetic Psychology. 97 (1960): 161-168.

Subjects and Measures: The subjects were 59 children from middle-class backgrounds and were divided into two age groups, 3 to 5 years (30 children) and 6 to 8 years (29 children). A precise breakdown by sex was not provided. Children were presented with puzzles, one of which they "failed" to finish in time and one of which they were "successful" on. Children were subsequently asked which of the puzzles they wished to repeat. In addition, the children were observed in free play for achievement efforts, help seeking from children or adults, approval seeking from children or adults, and readiness of withdrawal from threatening situations.

Results: No sex differences were found among the younger children. Among the older children, boys were more likely to state a preference for repeating the "failed" puzzle, girls were more likely to seek help and approval from adults and to withdraw from threatening situations than were boys.

Gottfried, N.W., and Seay, B. 1974.

See abstract in Activity Level section.

Haaf, R.A. 1974.

See abstract in Abilities and Achievement section.

Harper, L.V., and Sanders, K.N. "Sex Differences in Preschool Children's Social Contacts During Free Play." Paper presented at the Annual Meeting of the Animal Behavior Society, 1975, Wilmington, North Carolina.

Subjects: Approximately 216 male and female U.S. preschools were observed out-of-doors in the fall, winter, and spring over 3 years (1971-72, 1972-73, 1973-74).

Measures: Observations were made of the following: (1) percentage of time spent in peer interaction; (2) percentage of time spent in adult interaction; (3) percentage of time spent out-of-doors; (4) percentage of interaction play out-of-doors; (5) percentage of adult contact out-of-doors; (6) percentage of emotion displayed out-of-doors.

Results: Boys consistently spent more time in peer interaction and out-of-doors than girls, especially in winter and spring (the study was conducted in California) as well as engaging in more interactive play, adult contact, and displaying more emotion out-of-doors. The girls spent more time in adult interaction generally than did boys.

Hutt, C. Males and Females. Harmondsworth, England: Penguin, 1972.

The author discusses the differentiation of the sexes behaviourally from an evolutionary and biological perspective. The early chapters discuss the genetic and hormonal bases of sex differentiation and relate these to behavioural differences in human and non-human primates. The later chapters deal more specifically with behavioural differences found among preschool children. The author concludes that of many sex differences in behaviour, there is clear evidence for biological bases and argues strongly for the recognition of these differences in dealing with the socialization of children. However, as the author herself emphasizes, "We have been describing and discussing males and females in general...and the degree of overlap on any performance is appreciable."

Jennings, S.A. "Effects of Sex Typing in Children's Stories on Preference and Recall." Child Development. 46 (1975): 220-223.

Hypothesis: It was hypothesized that children would prefer stories where the character consistently exhibited sex-appropriate role behaviour, and that reversed-sex role stories would be better recalled.

Subjects: Thirty-two boys and 32 girls, ages 4 and 5, from nursery school and day-care centres.

Measures: Children of the same sex in groups (5 to 8 subjects per group) were told stories portraying boys and girls preferring culturally defined "sex-appropriate" and "sex-inappropriate" behaviours (e.g., a girl wanting to be a ballerina or a mail carrier).

Results: Recall scores were significantly higher for stories involving "inappropriate" sex roles than for stories involving "appropriate" sex roles for all children, except nursery school boys. Both boys and girls preferred the story which depicted the character as portraying appropriate sex-typed behaviour, as predicted.

Kagan, J., and Moss, H.A. "The Stability of Passive and Dependent Behavior from Childhood Through Adulthood." Child Development. 31 (1960): 577-591.

Subjects: The subjects were 27 male and 27 female Caucasian adults assessed periodically from 3 years of age to adulthood (20-29 years).

Measures: Via observations and interviews, for ages 3 to 6 and 6 to 10, the subjects were assessed for the tendency to behave "passively in the face of frustration" (e.g., whining, crying and soliciting help, and withdrawal). For ages 3 to 6, subjects were assessed for the tendency to seek help from female adults and for ages 6 to 10, to seek emotional support and assistance from female adults. Between 20 and 29 years of age the subjects were interviewed and rated on the following: seeking security and gratification of dependency in job selection, dependence on love object, dependence on parents and others, withdrawal in the event of failure, and conflict over dependency.

Results: Correlations among variables revealed:

(1) a high degree of relation among the various measures within each age (i.e., 3 to 6, 6 to 10, adulthood) for males and females;

(2) a high degree of relation among the variable between 3 to 6 and 6 to 10 for males and females;

(3) a moderate but significant degree of relation among the variables from 6 to 10 and adulthood for females;

(4) no relation among the variables between 3 to 6 and adulthood for males or females, between 6 to 10 and adulthood for males.

Comment: The authors explain a lack of relation from 6 to 10 and adulthood for males by suggesting that there are great pressures to independence for males in North American culture, causing them to change their pattern of dependency behaviours. It should be noted, however, that in 9 of 10 cases the intercorrelations among the childhood measures the correlation is lower for males, suggesting that the dependency measures were less reliable for males.

Lester, B.M., Kotelchuck, M., Spelke, E., Sellers, M.J., and Klein, R.E. "Separation Protest in Guatemalan Infants: Cross-cultural and Cognitive Findings." Developmental Psychology. 10 (1974): 79-85.

A comparison of the onset and development of separation protest was made between Guatemalan and United States infants.

Subjects and Measures: Forty-two boys and girls aged 9, 12, 18, and 24 months were assessed for reactions to the presence or absence of mother, father, or a female stranger.

Results: Aside from the two minor differences (i.e., Guatemalan children were somewhat accelerated developmentally and somewhat less responsive to manipulations involving the father) the developmental trends were highly similar in both cultures. Reduction in play in the stranger's presence or either parent's absence, and increase in playing in the stranger's absence or either parent's presence were found to begin around 12 months, to peak somewhere between 12 and 18 months, and to disappear by 24 months. Both samples were similar in that there were no reported sex differences.

Maccoby, E.E., and Jacklin, C.N. 1973.

See abstract in Fearfulness section.

McGuire, J.M., and Thomas, M.H. "Effects of Sex, Competence, and Competition on Sharing Behavior in Children." Journal of Personality and Social Psychology. 32 (1975): 490-494.

Subjects and Measures: The subjects were 25 girls and 30 boys in fourth and fifth grades in a rural elementary school. Subjects played a game in same-sex pairs under competition or no competition conditions and were subsequently asked to share their winnings with a child who had performed either more, less, or equally competently.

Results: Males who had played under competition conditions were reluctant to share their winnings with a more competent child. Girls were unaffected by the experimental manipulations.

Comments: The authors suggest that these (predicted) results may be explained by the males' perceived status threat in the competence comparison under competitive conditions. Such comparison is less relevant to the female accepting a traditional non-competitive role.

Post, B., and Hetherington, E.M. "Sex Differences in the Use of Proximity and Eye Contact in Judgements of Affiliation in Preschool Children." Developmental Psychology. 10 (1974): 881-889.

Hypothesis: It was hypothesized that the "expressive, person-oriented" role of females would lead to greater sensitivity of females than males regarding non-verbal cues of social relations than would the instrumental object-oriented role of males.

Subjects and Measures: Eighty children, divided equally according to age (4- versus 6-year-olds) and sex, were administered a test consisting of cards depicting a young man and woman, varying with regard to proximity and degree of eye contact, to assess the ability of the children to infer degree of affiliation (i.e., liking) from the non-verbal cues.

Results: Older children were better than younger children and females were better than males in using the non-verbal cues. A subsequent training experiment revealed that four-year-old girls more readily learned to use the non-verbal cues than did boys.

Whiting, B., and Edwards, C.P. 1973.

See abstract in Aggression section.

ACTIVITY LEVEL

Adelson, E., and Fraiberg, S. "Gross Motor Development in Infants Blind from Birth." Child Development. 45 (1974): 114-126.

Subjects: Ten intact, totally blind infants, aged 1 to 11 months, from a wide range of social status levels.

Measures: Longitudinal examination of patterns of gross motor development, observed past the second birthday.

Results: Blind infants did not differ from sighted infants on neuromuscular maturation and postural achievements, according to the Bayley Scales of Infant Development (1969). However, self-initiated mobility and locomotion were delayed as expected, probably due to the late adaptive substitution of sound for sight as incentive for mobility. No sex differences were found.

Battle, E.S., and Lacey, B. "A Context for Hyperactivity in Children, Over Time." Child Development. 43 (1972): 757-773.

Subjects and Measures: There were 74 subjects studied from birth to maturity (18 to 26 years of age); 31 were females, 45 were males. The subjects came from predominantly middle-class families. The subjects were observed in a variety of settings as children, and were subsequently interviewed extensively through adolescence and adulthood. Ratings were grouped into five age periods: birth to 3 years, 3 to 6 years, 6 to 10 years, 13 to 17 years, and young adult (18 to 26 years). Activity ratings (gross motor activity) based on direct observation were available for the first three periods.

Results: Males were consistently rated as more active than females, although the only period considered separately, for which this was significant was the 6 to 10 year period. A number of maternal behaviours (controlling, critical, and punitive) were related to high levels of activity in boys but not in girls. In general, activity level in boys related somewhat differently to variables such as achievement, sociability, aggression, than it did in girls.

Blurton-Jones, N.G., and Konner, M.J. 1973.

See abstract in Aggression section.

Brackbill, Y. 1975.

See abstract in Fearfulness section.

Brindley, C., Clarke, P., Hutt, C., Robinson, I., and Wethli, E. 1973.

See abstract in Aggression section.

Brooks, J., and Lewis, M. "Attachment Behavior in Thirteen-month-old Opposite-sex Twins." Child Development. 45 (1974): 243-247.

Hypothesis: It was hypothesized that there would be sex differences in proximal and distal attachment behaviours of 1-year-old opposite-sex twins, with girls exhibiting more of both types of attachment behaviour than boys towards their mothers.

Subjects and Measures: Seventeen sets of opposite-sex twins, 12 to 15 months old, accompanied by their mothers, were observed individually in a playroom. Observation was made on the following behaviours: attachment behaviours, toy preference, style of play, and activity level.

Results: Indeed, there were sex differences found between the girl twin and the boy twin infants. Girls looked at and maintained proximity with their mothers more often than did the boys. Girls also tended to touch and vocalize to their mothers more frequently than the boys did, though the difference was not significant. Another interesting difference was found in boys being more stressed than the girls when separated from their mothers. However, no sex differences were observed in activity level and style of play.

Goggin, J.E. "Sex Differences in the Activity Level of Preschool Children as a Possible Precursor of Hyperactivity." Journal of Genetic Psychology. 127 (1975): 75-81.

Subjects and Measures: The 73 subjects, 41 males and 32 females, ranging in age from 3 years 10 months to 5 years 7 months, were observed during normal nursery school activities for 12, ten-minute periods. The children were described as suburban middle- and upper-middle-class children. Intelligence quotients were in the normal range. A wide variety of quasi-inferential categories of behaviour were recorded, such as "dependency," "negative attention seeking," individual activities, social integration with peers. The main measure of activity level on which the sexes were compared was the number of changes of activity both within and between the general categories.

Results: Boys had a significantly higher activity level than girls.

Comment: The author did not report any IQ difference between boys and girls. However, from the data provided in the article it is possible to make a statistical test which reveals that, for the children in this study, boys had a significantly higher IQ score. In the absence of any information on the correlation between IQ and activity level, the sex difference in activity level is difficult to interpret.

Gottfried, N.W., and Seay, B. "Early Social Behavior: Age and Sex Baseline Data from Hidden Population." *Journal of Genetic Psychology*. 125 (1974): 61-69.

Subjects and Measures: Observations were made of 17 males and 20 females at ages 3, 4, and 5 (27 black and 10 white from low income backgrounds). The children were observed in a play room in same-sex triplets and assessed on:

(1) object-oriented behaviours, manipulate, oral contact, throw, ride on, sit on;

(2) peer-directed behaviours, hit, hit with object, withdraw, approach, smile or laugh, frown or cry, verbalize and cry.

Results: Few sex or age differences were observed in object-oriented behaviours, except that girls manipulated animals and self more than boys. Males received higher scores on *all* peer-directed behaviours and significantly so on hit, hit with object, verbalize, and marginally significant on smiling. Also older boys engaged in more touching than older girls or younger boys and girls.

Harper, L.V., and Sanders, K.N. 1975.

See abstract in Sociability section.

Lester, B.M., Kotelchuck, M., Spelke, E., Sellers, M.J., and Klein, R.E. 1974.

See abstract in Sociability section.

Lyberger-Ficek, S., and Sternglanz, S.H. 1975.

See abstract in Fearfulness section.

Maccoby, E.E., and Jacklin, C.N. 1973.

See abstract in Fearfulness section.

Rosenblith, J.F. "Relations Between Neonatal Behaviors and Those at Eight Months." *Developmental Psychology*. 10 (1974): 779-792.

An attempt was made to assess continuities of development from birth to eight months of age.

Subjects and Measures: A "nearly" random sample of 1,315 male and female blacks and whites was assessed on the first and third days of life, as well as eight months, on a variety of criteria for activity levels, physical, motor, social emotional, and intellectual development.

Results: Males and females showed very similar relations between prenatal and eight-month measures. Gross motor development was most consistent for males and social emotional development was most consistent for females.

Rosenfeld, E.F. 1975.

See abstract in Creativity section.

Routh, D.K., Schroeder, C.S., and O'Tuama, L.A. "Development of Activity Level in Children." Developmental Psychology. 10 (1974): 163-168.

Subjects and Measures: Both open-field observation and questionnaire techniques were used to assess activity levels of 140 children (normal IQ range, middle class, sampled equally by sex, and aged 3 to 9 years). Observational measures were obtained by observing translational movement across a room and the number of different toys contacted as the child played alone under instruction which did or did not require restriction of movement.

Results: Age effects were found revealing a consistent decrease in activity level over age for all measures. The questionnaire measure was uncorrelated with observational measures. No sex differences were found.

Schwartz, J.C., Strickland, R.G., and Krolick, G. 1974.

See abstract in Aggression section.

Slovic, P. 1966.

See abstract in Fearfulness section.

Smith, P.K. "Temporal Clusters and Individual Differences in the Behaviour of Preschool Children." In Comparative Ecology and Behaviour of Primates, edited by R.P. Michael and J.H. Crook. London and New York: Academic Press, 1973.

Subjects and Measures: Twenty-nine children, ranging in age from 22 to 57 months, were observed in a day nursery in Sheffield, England. The children were mainly from lower-middle and working class parentage, eighteen had mothers who were unmarried, divorced, or separated and two were described as of Afro-Asian origin. Children were observed over a two-month period and the incidence of a wide variety of behaviours was noted (53 categories).

Results: Analysis suggested that the children's behaviours could be summarized by three dimensions: the first being one of social participation, and the latter two apparently having to do with activity and manipulation of objects. No sex difference was found for the first factor. Some sex differences were suggested, however, by the other two factors. Behaviours associated with the sex factor were crawling, rolling, vocalization accompanying play, crouching, pushing and pulling toys, talking with, and reacting to, the observer for boys and watching teachers, automanipulation, digit sucking, chasing-fleeing, and water play for girls.

Tuddenham, R.D., Brooks, J., and Milkovich, L. "Mothers' Reports of Behavior of Ten-year-olds: Relationships with Sex, Ethnicity, and Mother's Education." Developmental Psychology.
10 (1974): 959-995.

Subjects: Mothers of 9-, 10-, and 11-year-olds (2,212 white, 641 black, 117 oriental and 79 chicano) were questioned about problem behaviours of their children.

Measures: The mothers were administered a behaviour inventory of 100 behaviours to be sorted into "true," "not true," and "uncertain." The behaviours are not easily y summarized (the article contains 27 pages of tables) and included problems such as nightmares, sleep walking, bed-wetting, hyperactivity, shyness, nail biting, etc.

Results: There were many sex differences (43 of the 100 items) over all and many were found consistently in the four ethnic groups. Items rated as more characteristic of boys related to: teasing, restlessness, vigour, bed-wetting, temper-tantrum, messy, resistance to assistance, being a daredevil, and hating to lose games. Items more characteristic of girls related to: being fussy about clothes, neatness, dislike of dirt, liking quiet activities, taking care of children, maturity, sensitivity (feeling easily hurt), giving in to other children, disliking being left at home when parents go out.

Whiting, B., and Edwards, C.P. 1973.

See abstract in Aggression section.

Willerman, L. "Activity Level and Hyperactivity in Twins." Child Development.
44 (1973): 288-293.

Subjects and Measures: Questionnaires were used to determine activity (actually hyperactivity, i.e., negative activity) and zygosity (whether the twins were identical or fraternal).

Results: Identical twins had significantly higher concordance for activity than fraternal twins. This was true to a greater extent for males than for females. No consistent sex differences in activity level were found.

Willerman, L., and Plomin, R. "Activity Level in Children and Their Parents." Child Development.
44 (1973): 854-858.

Subjects and Measures: Questionnaires to parents of 43 3- to 5-year-old children assessed activity levels of mother, father, and child (26 boys and 17 girls). The activity levels of parents were retrospective to childhood.

Results: Boys' activity levels were significantly correlated to mothers' activity levels, while girls' activity levels were significantly with fathers' activity levels. No significant sex differences in activity level were found, although fathers of boys had higher retrospective activity levels than fathers of girls.

FEARFULNESS AND TIMIDITY

Abramowitz, S.I., and Abramowitz, C.V. "A Tale of Serendipity: Political Ideology, Sex Role Prescriptions, and Students' Psychological Adjustments." Developmental Psychology.
10 (1974): 299.

Subjects: Eighty-five female and 91 male college students, predominantly white, were sampled to represent a "broad representation of campus political opinion." Subjects were divided into ideological "moderates," scoring between 25th and 75th percentile on the Politico-Economic Conservatism Scale, and "extremists" scoring beyond either end of the cutoff.

Measures: Two tests were administered to establish the subjects' emotional state: Spielberger's State-Trait Anxiety Inventory, and the Emotional Stability Subscale of the Gordon Personal Profile.

Results: The ideologically left and right female students were found to be less emotionally stable than their contemporary male counterparts. The authors speculate that these extremist females might feel "impertinent" when they attempted to challenge the conventional female sex role norms. Psychonoxious social feedback (typical of most male-oriented societies) might have aroused the anxiety. Ideologically moderate men and women did not differ.

Brackbill, Y. "Continuous Stimulation and Arousal Level in Infancy: Effects of Stimulus Intensity and Stress." Child Development.
46 (1975): 364-368.

Subjects and Measures: Arousal (cardiac responsivity by means of electrodes placed on the subject's chest) to auditory stimulation was investigated in 90 full-term infants at 44 hours of age (30 uncircumcised males, 30 circumcised males, and 30 females).

Results: Females and uncircumcised males were very similar while circumcised males showed markedly different responsivity.

Brooks, J., and Lewis, M. 1974.

See abstract in Activity Level section.

Cohen, J., Dearnaley, E.J., and Hansel, C.E.M. "The Risk Taken in Crossing a Road." Operational Research Quarterly.
6 (1955): 120-127.

Subjects and Measures: Observations were made at a main road in the city of Manchester of 491 persons, from less than 15 years to greater than 61 years (estimates), crossing in front of oncoming traffic.

Results: Males at all ages, except the 31- to 45-year-old group, took more risks in crossing at closer temporal distances to oncoming traffic.

Cramer, P., and Hogan, K.A. 1975.

See abstract in Dominance section.

Ebbesen, E.B., and Haney, M. "Flirting with Death: Variables Affecting Risk Taking at Intersections." Journal of Applied Social Psychology. 3 (1973): 303-324.

Subjects and Measures: In four field studies of motorists at an intersection entering onto a busy road, the proportion of drivers who pulled out in front of oncoming cars at various temporal distance was noted.

Results: Of the number of factors examined, length of time waiting at the intersection (in line), most affected risk taking (pulling out at close temporal distances). It was found that men took more risks than women.

Jacklin, C.N., Maccoby, E.E., and Dick, A.E. "Barrier Behavior and Toy Preference: Sex Differences (and Their Absence) in the Year-old Child." Child Development. 44 (1973): 196-200.

Subjects and Measures: Two experiments were conducted, each employing samples of 40, 13- to 14-month-old children, equally divided by sex in each experiment. Children were observed with their mothers in a room with toys considered to be stereotypically masculine (robots, play school workbench) or feminine or possible neutral (ferry wheel, "cuddly" stuffed animals). During this period, in experiment 1 only, the child was placed behind a barrier. A number of child behaviours were noted.

Results: Girls spent more time clinging to the barrier than did boys and under conditions when the mother was near, girls cried more than boys. No other sex differences were noted in reactions to being placed behind the barrier. Girls played significantly less with the robots than did boys and somewhat more, though not significantly more, with cuddly toys. No differences were observed in mothers' behaviours in terms of which toys were offered to boys or to girls.

Lyberger-Ficek, S., and Sternglanz, S.H. "Innate Sex Differences in Neonatal Crying: Myth or Reality." Paper presented at the Biennial Meeting of the Society for Research in Child Development, April 1975, Denver, Colorado.

Subjects and Measures: In this study, 69 females and 56 males, 2 to 72 hours of age, representing both primiparous and multiparous births, as well as breast and bottle feeding, were observed in a hospital nursery. Of the 56 males, 24 had been circumcised. Crying and fussing of infants, as well as caretaking activities of nurses, were recorded.

Results: No sex differences in crying and fussing were found. However, circumcised males cried and fussed more than females or uncircumcised males. Sex differences were found in nurses' behaviours. Nurses appeared to give more attention to males than to females. This was consistently true, however, only in uncircumcised males.

Comment: Perhaps the most interesting finding of this study is the relatively great attention nurses devote to (uncircumcised) males. The authors do not comment much on this, except to suggest the nurses may not wish to irritate the circumcised males further. However, this focus seems strange in view of the fact that it was the uncircumcised males who differed from circumcised males and females. Circumcised males did not differ from females in terms of nurses' attention. The only way in which the authors' speculation makes sense is that they maintain the unstated hypothesis that nurses have some sort of irrational bias for giving attention to male rather than to female neonates. An alternate hypothesis would suggest that (uncircumcised) male neonates elicit caretaking responses to a greater extent than do females. The failure to find behavioural differences between sexes must be interpreted with caution because of methodological flaws. From the description of the observational methodology it appears that Hansen frequencies were used, a particularly imprecise and distorted measure. This suspicion is somewhat confirmed by the authors' admission that their records "reflected neither the frequency nor duration of the behaviour within the interval." A true frequency of nurses' behaviour was apparently obtained. Thus it is not difficult to understand why differences in nurses' behaviour were noted, but differences in infant behaviours were not.

It appears likely that differences in nurses responding reflects some behavioural differences between male and female neonatal behaviour. This behaviour difference may have nothing to do whatever, of course, with crying and fussing. It appears at least reasonable that the differences may be in the more "attractive" behaviours that may characterise uncircumcised males and which may be suppressed in the circumcised males.

Maccoby, E.E., and Jacklin, C.N. "Stress, Activity, and Proximity Seeking: Sex Differences in the Year-old Child." Child Development. 44 (1973): 34-42.

Proximity seeking behaviour and activity level of toddlers in the absence or presence of a fear stimulus are examined in this study. The hypothesis was that females will tend to be immobilized, while males tend to remain active under conditions of threat.

Subjects: Subjects in experiment 1 were 20 girls and 20 boys, aged 13 and 14 months. Experiment 2 consisted of 40 subjects, matched for age, sex, and other characteristics as subjects in experiment 1.

Measures: Activity level was defined as the number of squares (marked on the floor) crossed during each phase of the session. Proximity to mother meant the number of time intervals during which the subject was on the same or an adjacent square to the mother.

In the first phase, mothers placed their children on an assigned square and then sat down on a chair which also had been designated in the experimental room. A free play period of five minutes elapsed. Then the second phase began and a fear stimulus (a loud angry male voice) was introduced for 15 seconds followed by a four-minute period of free play. The fear stimulus was moderate in experiment 1, but more intensive in experiment 2. Activity level and proximity seeking were scored from one-way mirrors.

Results: Proximity to the mother increased significantly following the fear stimulus and increased greater for the loud than the moderate intensity stimulus. Sex differences in proximity were not found in either phase, although girls' means tended to be somewhat higher.

Though boys were found to be more active than girls in the absence of fear, activity declined significantly after the introduction of the fear stimulus for boys, but not for girls.

Comments: The hypothesis that females would freeze and males would act under fearful conditions is not only not confirmed but the evidence appears to point in the opposite direction. This seems to lend support to the implication that females, rather than males, can withstand stress better.

Moss, H.A. "Sex, Age, and State as Determinants of Mother-infant Interaction." Merrill-Palmer Quarterly. 13 (1967): 19-36.

Abstracted in Maccoby and Jacklin 1974.

Rosenblith, J.F. 1974.

See abstract in Activity Level section.

Slovic, P. "Risk Taking in Children: Age and Sex Differences." Child Development. 37 (1966): 169-176.

Subjects and Measurements: Subjects were 1,047 children from 6 to 16 years of age, who volunteered to play a game of chance at a country fair. The game involved flipping knife switches to win candies. Nine of 10 switches won the subject a spoonful of candies and one (the disaster switch) led to forfeiture of all winnings and termination of the game. The number of switches thrown before voluntarily stopping was the main measure reported.

Results: More than twice as many boys than girls volunteered. Of those that did, older children were less likely to stop voluntarily (took more risks) than younger children, and boys were less likely to stop voluntarily than were girls.

Smith, P.K. 1973.

See abstract in Activity Level section.

## DIFFERENCES AND SIMILARITIES IN ABILITIES AND ACHIEVEMENT

### PERCEPTION, LEARNING, MEMORY, AND GENERAL INTELLECTUAL ABILITIES

Blank, M., Berenzweig, S.S., and Bridger, W.H. "The Effects of Stimulus Complexity and Sensory Modality on Reaction-time in Normal and Retarded Readers." *Child Development*. 46 (1975): 133-140.

Subjects: Forty-eight normal and retarded 9-year-old boys and girls, of lower and lower-middle SES (normal children IQ 105 to 110, retarded children IQ 85 to 90).

Measures: Reaction-time was measured in an intramodal (visual and visual) and a crossmodal (visual and auditory) task.

Results: Both normal and retarded children were found to have longer reaction-time in crossmodal task than in intramodal task. However, the introduction of a complex visual stimulus resulted in slower reaction-time by the retarded subjects, for both within and across modalities. No sex differences were found.

Brackbill, Y. 1975.

See abstract in Fearfulness section.

Casler, L. "Supplementary Auditory and Vestibular Stimulation: Effects on Institutionalized Infants." *Journal of Experimental Child Psychology*. 19 (1975): 456-463.

Subjects and Measures: One hundred and fifty-six white, illegitimate, institutionalized infants of normal birth, whose mothers were middle class, were given environmental enrichment by means of:

(1) vestibular stimulation (handling by nurse) for two, 15-minute sessions, five days per week;

(2) vestibular stimulation supplemented with 30 minutes of verbal stimulation (nurses reciting nursery rhymes);

(3) a no-treatment condition.

The Gesell Developmental Schedules were used to assess the infant's progress until the age of 27 months.

Results: Data analysis revealed no significant treatment effects for either group 1 or 2. There were no sex differences on a short-term basis. However, the long-term results showed that females were superior to males on the 15-month language and the 27-month personal-social subtests.

Crandall, V.J., and Rabson, A. 1960.

See abstract in Sociability section.

Cuvo, A.J. "Developmental Differences in Rehearsal and Free Recall." Journal of Experimental Child Psychology. 19 (1975): 265-278.

Subjects and Measures: Developmental differences of 120 singular nouns occurring 10-40 times per million words in free recall were investigated in 20 fifth graders, 20 eighth graders, and 20 college students, all equally divided between sexes.

Results: Free recall increased as a function of age. No significant sex differences were found.

Denny, D.R. "Recognition, Formulation, and Integration in the Development of Interrogative Strategies among Normal and Retarded Children." Child Development. 45 (1974): 1068-1076.

Subjects: Study 1: 10 boys and 10 girls, aged 5 to 10 years, from a rural community, were studied. Study 2: 48 institutionalized retarded children, matched for age, were also included.

Measures: Twenty Questions Procedure was administered to determine the use of constraint-seeking strategies in solving problems. (Constraint-seeking strategy directs the focus of the problem to something more specific, e.g., Is it a tool?)

Results: Constraint-seeking strategy and related abilities increased across mental age and grade levels. Retarded subjects were (1) less likely to employ constraint-seeking questions, (2) less efficient in integrating given information in problem solving, (3) less able in all other related underlying abilities. No sex differences found.

Friedman, S., Bruno, L.A., and Vietze, P. "Newborn Habituation to Visual Stimuli: A Sex Difference in Novelty Detection." Journal of Experimental Child Psychology. 18 (1974): 242-251.

Subjects and Measures: Thirty-six subjects, equally divided by sex, ranged in age from 28 to 82 hours, were presented with a 4 or 144 square visual target (black and white checkerboard) until subjects habituated (i.e., a decrement in visual fixation time). A new pattern was presented and degree of recovery of visual fixation was noted.

Results: All subjects showed a recovery of habituation when a new pattern was introduced, provided it was sufficiently different from the original. This, the authors suggest, is evidence that infants are capable of storing simple visual information not long after birth. Although all subjects showed recovery following maximum stimulus change, only girls did so following moderate stimulus change.

Haaf, R.A. "Complexity and Facial Resemblance as Determinants of Response to Facelike Stimuli by 5 to 10 Week Old Infants." Journal of Experimental Child Psychology. 18 (1974): 480-487.

Subjects and Measures: Twenty-four subjects, half male and half female, at 5 and 10 weeks of age were observed for responsiveness (looking at the stimulus) to drawings on the basis of stimulus complexity or of degree of resemblance to the human face. Fixation time was recorded continuously both during trials and during intertrial intervals.

Results: There was no evidence of sex differences, nor was there any evidence that infants responded to facial resemblance. However, it appeared that subjects were responding to degree of complexity in the stimulus, with the five-week-old infants preferring an intermediate level of stimulus complexity and the ten-week-olds showing a linear preference for increasing levels of complexity.

Harter, S. "Developmental Differences in the Manifestation of Mastery Motivation on Problem Solving Tasks." Child Development. 46 (1975): 370-378.

Subjects and Measures: The relative strengths of mastery motivation (the desire to solve intellectually challenging problems) and the need for approval were compared in 40 (4- and 10-year-old) boys and girls.

Results: Boys were more influenced by variations in mastery motivation while girls were more influenced by experimenter approval. The latter finding should be qualified by the fact that only female experimenters tested the children.

McGuire, J.M., and Thomas, M.H. 1975.

See abstract in Sociability section.

Wilson, R.S. "Twins: Mental Development in the Preschool Years." Developmental Psychology. 10 (1974): 580-588.

Mental development of 350 pairs of twins was studied over the first six years of life.

Subjects and Measures: Three hundred and fifty pairs of white twins from a wide variety of socio-economic backgrounds were administered various standardized tests of intellectual development of ages 1-1/2, 2, 3, 4, 5, and

6 years of age.

Results: The main results centred on the consistently closer concordance of intellectual development in monozygotic twins than in dizygotic twins. A number of sex differences were also reported, suggesting different developmental trends for the sexes. Although males and females obtained equivalent scores at 1-1/2 and 2 years of age, males lag behind females at 3, 4, and 5 years, catching up by 6 years of age. The age-to-age correlations (prediction of IQ at a later age from IQ at an earlier age) also showed some differences between sexes.

## SPATIAL ABILITIES

Jahoda, G., and McGurk, H. "Development of Pictorial Depth Perception: Cross-cultural Replications." Child Development. 45 (1974): 1042-1047.

Subjects: Working class and low SES boys and girls, 4 to 7 years old, of African, Chinese, and Scottish ethnicity.

Treatment: Construction of 3-dimensional pictures with 2 female dolls of identical appearance but of different sizes.

Measure: Depth discrimination.

Results: Size accuracy increased with age and the number of depth cues. Spatial accuracy increased with age but decreased with addition of depth cues. No cultural differences found. No sex differences found.

Kagan, S. "Field Dependence and Conformity of Rural Mexican and Urban Anglo-American Children." Child Development. 45 (1974): 765-771.

Hypothesis: Rural Mexican children are more compliant than urban Anglo-American children.

Study 1

Subjects: 16 boys and 16 girls, half from rural Mexican and half from urban Anglo-American populations.

Measures: Subjects were tested for field dependency in the rod and frame apparatus.

Results: Rural Mexican children were more field dependent than urban Anglo-American children. No sex differences were found.

Comments: Differences in field dependence-independence are frequently cited but, as the author notes, on limited evidence.

Study 2

Subjects: Similar to Study 1.

Measures: Subjects were given an Ash type of conformity task.

Results: Rural Mexican children were more conforming than urban Anglo-American children. No sex differences were found.

Comments: Study fails to support the oft-cited claim that females are more conforming than males.

## CREATIVITY

Goor, A., and Sommerfeld, R.E. "A Comparison of Problem-solving Processes of Creative Students and Noncreative Students." Journal of Educational Psychology. 67 (1975): 495-505.

Subjects and Measures: Creativity was measured on 111 university men and 112 university women (all in their first year). As measured by the Guilford "Divergent Semantic Transformation," the top 26 scores were considered high creativity, while the bottom 26 scores were of low creativity. The high and low creative subjects were given one concrete and two abstract problems to solve out loud. Their solutions were taped and analyzed.

Results: The high creative subjects were significantly different from the low creative subjects as revealed by the solutions to the given tasks. A trend toward divergence across time was apparent and the nature of the task seemed to influence the pattern of response. There were no sex differences found.

Rosenfeld, E.F. "The Relationship of Sex-typed Toys to the Development of Competency and Sex-role Identification in Children." Paper presented at the Biennial Meeting of the Society for Research in Child Development, April 1975, Denver, Colorado.

Subjects and Measures: Ten boys and 10 girls from each of grades 1 to 3, were presented with four male sex-typed toys and four female sex-typed toys and were asked to think of the different (strange, exciting, or interesting) ways the toys could be used. From the answers, two measures of creativity were assessed--fluency (number of answers) and flexibility (number of different kinds of answers).

Results: No sex differences on either measure of creativity were found. Male sex-typed toys consistently and overwhelmingly elicited greater fluency and flexibility than female sex-typed toys.

Comment: This study raises serious questions about the advisability of using toy preference measures as indices of sex-role adoption as is so often the case; that is, since boys' toys are more interesting than girls' toys, they are not likely to be differentially chosen solely for their sex-role appropriateness. It is not surprising, then, that many studies of sex-role identification which employ toy preference measures, conclude that girls are "less strongly sex-typed" than boys. In addition, the study raises the possibility that playing with female sex-typed toys may ultimately reduce competency.

Torrance, E.P. Rewarding Creative Behavior. Englewood Cliffs, N.J.: Prentice-Hall, 1965.

Abstracted in Maccoby and Jacklin 1974.

# Summary

In a study of the biological and cultural interpretations of sex roles as they pertain to education, little light was shed on the weighting of these two sources of present-day sex roles. On the other hand, in textbooks approved for use in Ontario there was observable stereotyping, coupled with significant underrepresentation of female characters. A review of other studies of textbooks showed that the same strong patterns are found in all kinds of texts all over Canada and the U.S.

Mixed findings on sex differences combined with mixed perspectives on biological versus social sources suggest the advantage of an interactive approach to the question. Such an approach allows both the recognition of the similarities as well as the differences between the sexes and the recognition of both biological and social influences on development.

An interactive approach takes a career approach to any phenomenon. Thus, the development of an attitude or idea by a set of persons is of as much or more interest than the end product (e.g., the current attitude). If there are several expected sources of the attitude (or other characteristic), the interactionist will examine them all for their degree of influence on each other as well as on the focal characteristic. In terms of sex differences and sex roles, this means that both biological and social influences are considered and that one also examines the effect that the social factors have on the biological factors _and_ that the biological factors have on the social factors.

## OVERVIEW OF FINDINGS

A review of the scientific literature with regard to the extent of differences between the sexes revealed that almost all biological and other characteristics are present in both sexes, but the degree of similarity is hard to determine from much of the published literature. Many researchers group male subjects and female subjects and obtain a summary measure of one or more characteristics. If the sample is large enough and the statistical technique sensitive enough, a difference between the group measures is reported. Not much discrimination was shown by researchers in reporting these differences. For both large and small differences generalizing statements about the "superiority" of one sex over another are made. There was a consistent indifference to "no difference" findings.

In Part 3 of this report a review of a significant book, _The Psychology of Sex Differences_ (Stanford University Press, 1974) by Maccoby and Jacklin, reveals that many commonly believed differences between the sexes are not upheld by research. Examples of those that are _not_ supported are: (a) girls are more suggestible than boys, (b) boys are more analytical than girls, and (c) girls lack achievement motivation. There are consistent findings which suggest that boys are more likely than girls to do better at visuo-spatial tasks from mid-childhood and at mathematics from early adolescence. Girls are more likely than boys to be more verbal from mid-childhood.

Although only a few biological characteristics absolutely distinguish between the sexes, researchers continue to look for biological causes for some of the other group differences which have been found. One such researcher is McGuinness[1] who did a literature review of sex differences in perception and cognition. She approached it in such a way that she arrived at two patterns of development from infancy that produced flattering profiles of the skills found in each sex. The following is a realistic description of the two profiles with an appropriate de-emphasis on the degree to which each sex should claim which profile.

McGuinness speculated that the earlier an infant makes distinctions in auditory intensity, the more likely that person will be to develop an interest in sounds, including music and voice. The interest in voice will lead to an interest in people and words. All of these interests are found in some members of both sexes, but they are more often found in girls than in boys.

The same researcher speculated that the earlier an infant makes distinctions in visual stimulus intensity, the more likely that person will be to do better at visuo-spatial tasks and will develop an ability in mathematics, especially geometry and trigonometry. These skills are found in both sexes, but they are found more often in boys than girls.

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[1] D. McGuinness, "Sex Differences in the Organization of Perception and Cognition." Unpublished manuscript, 1974. See Part 2 for a discussion and abstract.

The prototype of a more fruitful approach was reported in a study by Rarick and Dobbins.[2] Based on four motor ability categories, they found eleven different ability profiles in a group of children. They noted the distribution of girls and boys in each profile and found that non-stereotyped profiles were more commonplace than is usually believed. For example, a child who is above average on strength, power, and size (Motor Ability Type I), but below average on the other three types of skills, is more likely to be a boy. But a child who is above average on that same skill type, as well as on fine motor skills (Type III) and balance (Type IV), is almost always a girl. A child who is above average on all four skills and a child who is below average on all skills is twice as likely to be a boy. There are twice as many children with the below-average profile than the above-average one.

On the assumption that some of the sex differences noted above, which appear in mid-childhood (i.e., visuo-spatial and verbal), may be due to school influence, the research literature in that area was reviewed. The only topic that showed enough research on which to base conclusions was the stereotyping in textbooks. All kinds of textbooks for all ages (K to 13) seriously under-represent females. Various methods of measuring the visibility of males and females in textbooks all showed the same trend. Males are much more visible as important characters, identifiable characters, in illustrations and in a variety of occupations. This is consistent with the findings of other studies. The bias increases as the grade level for the test goes up. These findings were also true for senior English literature, educational television, and educational kits.

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[2] G.L. Rarick and D.A. Dobbins, "A Motor Performance Typology of Boys and Girls in the Age Range 6 to 10 Years," Journal of Motor Behavior 7 (1975): 37-43. See Part 2 of this report for a discussion and abstract.

If all characters are weighted equally, then all behaviours (except "crying") attributed to them are done more by males than females. If an attempt is made to weight them by the proportion in which they are present (e.g., when females are outnumbered two to one by males) then a different conclusion is found. It can then be said that female characters were more likely to ask a question, carry something, come or go, cry, feel an emotion, like something or someone, respond to someone, be sad, be scared, shout, sit, speak, think about something (without speaking), and work. Male characters were more likely to be competent, dominant, and giving or writing.

It is unlikely that children do this weighting in their heads as they read, so it may be assumed that children see male characters doing everything (except crying) more than female characters.

## PART 1: SEX ROLE STEREOTYPING AND EDUCATION

Part 1 of this report reviewed research on sex role stereotyping in schools, including media, and presented new research on texts, English literature, educational video, and educational kits used in schools in Ontario. There is mixed evidence of stereotyping by teachers and administrators, but the research is sparse and inadequate. No conclusions can be drawn.

There is, however, clear evidence of stereotyping in the media. All forms show an underrepresentation of female characters and tend to stereotype those that are present. The visibility of girls and women decreases as the grade level of texts goes up. There is no clear evidence of any change in recently published texts. The findings are consistent for both French and English texts, as well as second-language instruction texts. The underrepresentation of females occurs in senior English literature selections, educational television, and educational kits. There is evidence of sex differences in interest and ability, but not starting until Grades 4 and 5.

As this investigation was requested and funded by a branch of the Ontario provincial government, the focus is on evidence collected in Ontario. For topics for which Ontario evidence does not exist, it was necessary to turn to other provinces and to the United States for suggestive evidence. This is especially true for investigations and observations about teacher and administrator attitudes and behaviour.

In connection with the first topic covered in Part 1 (teacher attitudes), one Ontario study is reported. Ricks and Pyke (with a small, non-random sample) report on teacher attitudes toward students of each sex. Some teachers saw differences and some did not. Other studies of teacher-student interactions suggest differences in teacher actions and reactions, but the findings are not consistent.

In the second topic the overall presentation of evidence is designed to examine as many studies of texts and children's media as could be located, and to cite their findings as well as those of the present study. One purpose in putting a great deal of emphasis on the findings of other studies is to show how pervasive the patterns observed are.

The four kinds of media examined are used by children in Ontario schools--textbooks, literature, video, and kits. The availability of reports of research by others varied with the type of media. Print was given the most attention, especially textbooks and children's picture books. Mass media video was also studied and a few of the studies presented. To the authors' knowledge, no one has published a study of sex role stereotyping in educational video. The study of kits is undoubtedly a first.

In review of the work of others, it became obvious that although many studies existed, none were as all-encompassing as this one. In the planning stages of this study there were few published studies of more than one kind of text available. The research also varied in quality and it was tempting to be critical of the sampling methods. Too many studies chose books selectively or said it was a random sample but did not use probability-controlled random selection methods.

The analysis of sex role stereotypes in children's literature and textbooks yielded such consistent results that the weight of the accumulated evidence suggests that any sampling inadequacies are irrelevant in this type of study.

The following conclusions about visibility of characters of either sex can be applied to other studies from Canada and the U.S., as well as to this study's sample of 302 texts approved for use in Ontario.

FEMALE BEINGS ARE UNDERREPRESENTED AS IMPORTANT CHARACTERS.

AMONG HUMANS REPRESENTED AS IMPORTANT CHARACTERS, WOMEN ARE MORE SERIOUSLY UNDERREPRESENTED IN COMPARISON WITH MEN THAN GIRLS ARE IN COMPARISON WITH BOYS.

AS GRADE LEVEL GOES UP, COMPARATIVE REPRESENTATION OF FEMALES TO MALES AS IMPORTANT CHARACTERS GOES DOWN IN TEXTS.

FEMALE BEINGS ARE SERIOUSLY UNDERREPRESENTED IN TEXTS IN ALL SUBJECT AREAS. THE UNDERREPRESENTATION IS MOST SERIOUS IN SOCIAL STUDIES AND SCIENCE TEXTS.

The Ontario sample also showed some findings that had not been investigated in previous studies.

WOMEN ARE ALMOST NEVER REPRESENTED IN A GENERALIZED (GENERIC) WAY (e.g., man is a mammal) AND GIRLS NEVER ARE.

FEMALE BEINGS ARE SERIOUSLY UNDERREPRESENTED AS IMPORTANT CHARACTERS IN BOTH ENGLISH AND FRENCH TEXTS.

Evidence from studies of picture books, literature from senior English literature courses in Ontario, educational television and kits also show the same underrepresentation.

All of the above conclusions apply to the visibility measure "identifiable characters" as well as the measure "characters in illustrations."

ALL STUDIES OF OCCUPATIONS OF MALE AND FEMALE CHARACTERS SHOW AN OVERWHELMING ADVANTAGE TO MALES IN NUMBER AND VARIETY OF OCCUPATIONAL MODELS.

A summary of the activities and characteristics attributed more to one sex than another was made in the above overview. Many other characteristics that were coded, and that might be considered stereotyped, did not appear often enough to be included in a statistical analysis.

Adequate evidence is unavailable to assess the effect of stereotyping in schools on children's attitudes and behaviour.

## PART 2: THE SEARCH FOR BIOLOGICAL ORIGINS OF SEX ROLES

Part 2 examined the question of the source of any differences between the sexes--biological factors or social pressure. Few biological characteristics are exclusive to one sex or the other. There is an overlap to be observed in almost all distributions of biological and social characteristics attributed to both sexes. An interactive model of biological and social sources of sex roles is recommended, along with assumptions of multiple modal types of persons instead of just two.

Patterns of genital and hormonal development are reviewed. The former is understood by looking at anomalous cases which shed light to a certain degree by allowing the researcher to see what factors are stronger in affecting sex roles. Children's sex roles seem to be quite malleable until puberty, when physiological differences become more pronounced and hormonal treatments are necessary to continue an erroneous assignment. Male and female hormone levels for the sex hormones are about equal until puberty. Females then shoot ahead of males on female hormones. Males increase in testosterone to about 100 times the level that females have in adulthood.

This large increase in testosterone (in comparison to a much smaller difference on the female hormones) may relate to other findings that suggest that the basic form is female and that it takes a large input of male hormones (in combination with receptive tissue structures from which the genitals develop) to change that form to male and maintain it that way. This finding comes mainly from animal research and some human cases.

Cerebral electrical activity, arousal mechanisms in infancy, sensory processing, motor abilities, perception, and cognition are all examined in the scientific literature. Group differences were found, but it was seldom possible to determine the

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Cerebral electrical activity, arousal mechanisms in infancy, sensory processing, motor abilities, perception, and cognition are all examined in the scientific literature. Group differences were found, but it was seldom possible to determine the extent of the difference reported. The overriding model of the researchers was that there were two kinds of people, males and females, and therefore two modes of characteristics were determined. The exception to that was the study of motor abilities discussed in the overview section.

This is the part of the report that discusses the interactionist approach most thoroughly. The assumption that social factors affect biological ones is not new, except in the area of sex roles. Such is the emotional baggage carried around by people in this area that they are just beginning to realize the implications of bio-feedback models for sex roles. There is no question that biological factors affect social ones, but there is not a valid assumption that all males are affected alike and that all females are affected differently.

## PART 3: ON SEX DIFFERENCES IN BEHAVIOUR

Part 3 reviewed recent psychological research, and reported that many of the commonly-held beliefs about differences between girls and boys are not clearly supported by research. Only three of nineteen differences are considered definite, and these do not appear until mid-childhood or adolescence. About half of the beliefs examined are not supported by evidence and the rest are still open questions. Instead of ignoring these as uninteresting, as is often the case, these studies should carry as much weight as another piece of research which does find a difference.

The manner of recent reviews of research in this area leads to an accumulation of evidence for each particular type of behaviour. These findings for each behaviour can be assessed for consistency.

Maccoby and Jacklin (1974) have done some of the most extensive work of this kind. They assess the process of cumulating evidence as follows.

> Having gone through the often tedious process of summarizing and analyzing existing research, we must ask ourselves about the adequacy of this method as a way of knowing the truth about sex differences. We have tallied studies--the number showing higher scores for boys, the number favoring girls, and the number showing no difference--knowing, of course, that the studies differ widely in the rigor of their design and procedures, the number of subjects used, the definition of variables, etc. It is not uncommon to find a "box score" in which the majority of studies find no difference, but where the studies that do find a difference favor one sex by a considerable margin (say, two or three to one). We have interpreted such an outcome as a weak trend in the direction indicated by the largest number of studies, but recognize that it is quite possible that the minority of studies might turn out to have more than a kernel of truth. With stereotypes and biases being as common as they are in the field of sex differences, it is quite possible that the majority of studies were all distorted in the same direction. We think it equally likely, however, that the appearance of a sex difference often depends upon detailed aspects of a situation in which behavior was studied--details that have so far gone unrecognized, but that interact with the more obvious aspects of a situation to change the way in which it is perceived.

Maccoby and Jackson go on to explain the problems in comparisons of studies which use self-rating procedures as opposed to testing or behaviour observations. They point out that ratings are often more situation specific than other measures, as in "cries often for a boy." A similar frequency of crying might be rated as not often "for a girl" with the anchor points not being explicitly mentioned.

Other hazards are found in the length of the unit under observation, situation specific limitations, changing measures as age changes, experimental situations versus real life observations, and adequacy of samples for generalization possibilities.

Given these qualifications to their conclusions, the following will serve as a summary.

## Unfounded Beliefs about Sex Differences

1. That girls are more "social" than boys.[3]
2. That girls are more "suggestible" than boys.
3. That girls have lower self-esteem.
4. That girls are better at rote learning and simple repetitive tasks; boys at tasks that require higher-level cognitive processing and the inhibition of previously learned responses.
5. That boys are more "analytic."
6. That girls are more affected by heredity; boys by environment.
7. That girls lack achievement motivation.
8. That girls are auditory; boys visual.

## Sex Differences That Are Fairly Well Established

1. That girls have greater verbal ability than boys.
2. That boys excel in visual-spatial ability.

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[3] See page 380 for discussion of possible change of status of these findings.

3. That boys excel in mathematical ability.

4. That males are more aggressive.[4]

Open Questions: Too Little Evidence or Findings Ambiguous

1. Tactile sensitivity.
2. Fear, timidity, and anxiety.
3. Activity level.
4. Competitiveness.
5. Dominance.
6. Compliance.[5]
7. Nurturance and "maternal" behaviour.

It is instructive to look at the slightly more detailed summaries provided by Maccoby and Jacklin on pages 349-355. Some of them are quoted here from each of the above categories. Some are chosen because they might have an effect on the children's own acquisition and application of stereotypes to themselves. Others are chosen for their applicability to academic abilities.

Unfounded beliefs:

> 2. That girls are more "suggestible" than boys. The findings: First, boys and girls are equally likely to imitate others spontaneously. Second, the two sexes are equally susceptible to persuasive communications, and in face-to-face social-influence situations (Asch-type experiments), sex differences are usually not found. When they are, girls are somewhat more likely to adapt their own judgements to those of the group, although there are studies with reverse findings. Boys, on the other hand, appear to be more likely to accept peer-group values when these conflict with their own.

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[4] See note 3 above.
[5] See note 3 above.

3. That girls have lower self-esteem. The findings: The sexes are highly similar in their overall satisfaction and self-confidence throughout childhood and adolescence; there is little information about adulthood, what exists does not show a sex difference. However, there are some qualitative differences in the areas of functioning where the two sexes have greatest self-confidence: girls rate themselves higher in the area of social competence; boys more often see themselves as strong, powerful, dominant, "potent."

### Established differences:

1. That girls have greater verbal ability than boys. It is probably true that girls' verbal abilities mature somewhat more rapidly in early life, although there are a number of recent studies in which no sex difference has been found. During the period from preschool to early adolescence, the sexes are very similar in their verbal abilities. At about age 11, the sexes begin to diverge, with female superiority increasing through high school and possibly beyond. Girls score higher on tasks involving both receptive and productive language, and on "high-level" verbal tasks (analogies, comprehension of difficult written material, creative writing) as well as upon the "lower-level" measures (fluency). The magnitude of the female advantage varies, being most commonly about one-quarter of a standard deviation.

2. That boys excel in visual-spatial ability. Male superiority on visual-spatial tasks is fairly consistently found in adolescence and adulthood, but not in childhood. The male advantage on spatial tests increases through the high school years up to a level of about .40 of a standard deviation. The sex difference is approximately equal on analytic and nonanalytic spatial measures.

### Open questions:

2. Fear, timidity, and anxiety. Observational studies of fearful behavior usually do not find sex differences. Teacher ratings and self-reports, however, usually find girls to be more timid or more anxious.

4. Competitiveness. When sex differences are found, they usually show boys to be more competitive, but there are many studies finding sex similarity. Madsen and his colleagues find sex differences to be considerably weaker than differences between cultures

> and, in a number of studies, entirely absent. Almost all the research on competition is maladaptive.... It appears probable that in situations in which competitiveness produces increased individual rewards, males would be more competitive, but this is a guess based on commonsense considerations, such as male interest in competitive sports, not upon research in controlled settings.

The review of the literature reported here examined the studies reported since the Maccoby and Jacklin publication, and found evidence that modifies some of their findings. Additional evidence suggests that neither sex is more social, but the difference in form (pointed to by Maccoby and Jacklin) is important and consistent. Of the four characteristics described as "well established" by the first authors, one is considered still open after this review. This further review suggests that the question of aggression is still open, due to some theoretical and methodological problems of the earlier studies. Additional studies would also move "compliance" from the "open" list to the "no difference" list.

The one lesson to be learned from the exercise that both this study and Maccoby and Jacklin have engaged in is that it is not prudent to draw conclusions from one or two pieces of research. It is necessary to look at trends across researches and to weigh the evidence. It is also wise to keep an open mind because evidence changes as measuring techniques and conceptualization sharpen.

What should also be emphasized at this point is that all of these generalizations are often taken too literally by the person looking for a handle on which to base their actions. The fact that a quick summary of Maccoby and Jacklin suggests that girls are more verbal than boys might lead to a change in behaviour of some adults which would deprive some boys of the encouragement that they deserve at a crucial time in their development. The details of the summary statement can be lost. For one thing, it is commonly believed that verbal differences are true from early years onward. Maccoby and Jacklin specify that the difference only begins to emerge at age eleven. It could, conceivably, be a result of the expectation existing at all during some of the previous five years of the student's existence.